

THE
Philosophical and Mathematical
ELEMENTS
OF
PHYSICK.

IN TWO BOOKS.

The First containing the THEORY:
The Second the PRACTICE.

Compos'd for the Use of all who study the
Art of Medicine.

By ARCHIBALD PITCAIRN, M.D.
And formerly Professor in the University of Leyden.

Translated from the correctest Impression of the
Latin, and compared with the best Manuscripts;
Some of which were transcribed from the Original,
under the Doctor's Direction and Approbation.

L O N D O N:

Printed for ANDREW BELL, at the Cross-Keys and
Bible in Cornhill; and JOHN OSBORN, at the
Oxford-Arms in Lombard-Street. M.DCC.XVIII.



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LONDON:
Printed for Andrew BELL, at the College-Door,
St. Martin's Church, and John OGDON, at the
College-Door in Lombard-Street. MDCCLXXV.



P R E F A C E.



THE great Name Dr. Pitcairn has acquired amongst the Learned, may seem to make it altogether needless to offer at the Recommendation of any thing that comes from his Hands : but however, many of our Readers perhaps will think we have not duly executed the Office of a Translator, unless we say something, as well in respect to our Author and his Works, as in behalf of our own Performance herein. To satisfy therefore such curious Inquirers, we

are prevailed upon by the Bookseller to write this Preface.

IT is certain Dr. *Pitcairn* was the first that brought us on this side the *Alps* acquainted with the true Method of Reasoning in the Art of Physick ; which before, amongst us, was but a confused Jargon, and as equally unintelligible as absurd ; insomuch that the Theory of Medicine might then more properly be stiled a Mystery than a Science.

AND it is no wonder the *Italians* should be beforehand with us in this Particular, since to them we are obliged for the first certain Light we had in the true Philosophy. For *Galileo* set on foot the only sure Means of arriving at the Knowledge of Nature, and her Operations ; which were founded on Experiments, and a mathematical Way of Argumentation. He was hereby enabled to shew the Falshood of the Peripatetick Principles ; and tho he had but

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but a moderate Skill in Geometry, yet he put it to an admirable Use. And as he clearly proved the Notion of Nature's Abhorrence of a Vacuum was a mere Chimera, so he demonstrated the Laws of Motion in the Descent of heavy Bodies and Projectiles. After him his Scholar *Toricelli*, and others, pursuing the same Course of Reasoning, made still farther Improvements.

IN the mean while here in *England* the Manner of Experimenting soon took place; and what my Lord *Bacon* begun, was by the Honourable Mr. *Boyle*, and others of the *Royal Society*, carried to a very great height of Perfection. And Sir *Isaac Newton* alone has given us more surprizing Instances of the Usefulness both of Experiments and the Mathematics, in discovering the Causes of Things, than any that had preceded him. This is evident to all who are capable of understanding his sublime Speculations.

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VI P R E F A C E.

BUT at the same time none amongst us, before *Pitcairn*, used this way of Inquiry in the Art of Physick to any great purpose: for tho *Harvey* and *Lower*, the one by his immortal Invention of the Circulation of the Blood, and the other by giving an accurate Description of the Structure and Use of the Heart, laid a good Foundation; yet the rest of the Theorists in their medical Disquisitions, had no regard to the Make and Disposition of Parts in the human Fabrick. *Charleton*, *Willis*, *Morton*, and others, have only abused us with new Words, without any Ideas, and which have no relation to the Animal OEconomy.

NOR did any of the *Italians*, till *Bellini*, afford us any real Knowledge in the Pathologick Part of the Art of Healing. *Borelli*, it is true, found out the Forces of the Muscles by the help of Geometry; but it was his Scholar alone

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alone who seems to have applied himself with any Success to the investigating the Causes of Distempers. This he was enabled to do by his Skill in Mechanicks, and those vast Labours he underwent, to learn, as he expresses himself, what was really an Animal, and how it performed those Operations, which were effected by the necessary Motions of the Instruments whereof it is composed.

OUR Author, in the Course of his Studies, casually lit on his Treatise *De Urinis & Pulsibus*. A Person of his clear Sense could not but be highly pleased with that Book : And tho' the Prolixity and Roughness of the Style might at first prove irksom to one of his polite Taste, yet upon a farther Perusal, he found an ample Amends for those Defects, from the Soundness of the Principles, and the Conclusiveness of the Manner of Reasoning there advanced. For what could yield a more

exquisite Delight to a rational Mind, than to find at length Truth and Light in so noble a Subject as the Art of Physick, when before it had been perplexed by the Falshood and Obscurity with which other Writers had overwhelmed that Science? To have explained, after a certain and intelligible manner, the Doctrine of the Urine and Pulses; the Consequences of Blood-letting, and the Effects of Medicines; and to have the Signs and Symptoms of the Diseases of the Head and Thorax deduced from the necessary Actions of the Parts which constitute the animated Machine: These were the things *Bellini* handled with the greatest Strength of Reason and Force of Argument.

HAVING so good a Guide, our Author quickly made a wonderful Progress, insomuch that his distinguishing Merit caused him to be soon taken notice of to advantage; and in 1691. procured him a Professor's Chair in the Uni-

University of *Leyden*. About this time he thought proper to make himself known to *Bellini*, for whom he had entertained so great a Veneration, on account of the Assistancess he had received in his Studies from his Works: This he did, in a Letter he wrote him, after a very handsom manner. Nothing can give us a greater Pleasure than to be commended by such as are really deserving: And *Bellini* was so sensible of this, that he sent Dr. *Pitcairn* his *Opuscula* to publish, together with an Attempt of his at the Character of a candid Person, occasioned by the Satisfaction he received from the just Praises the Doctor had bestowed on him.

IT being now his Office to instruct others, Dr. *Pitcairn* found nothing in the System-Writers that he could make any use of, either to his own Content, or the Benefit of his Auditors; he was therefore obliged to compose one anew for the Service of his Pupils. In it was
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X P R E F A C E.

contained the Institutions and Practice of Physick, which he gave in the Course of his Lectures. When he treated of the Institutions, he exhibited an exact Idea of the Animal OEconomy, and shewed the Falshood of many Notions hitherto received as certain Truths; endeavouring at the same time to fix the Meaning of divers Terms, frequently used by the Writers of Physick, tho they had not as yet any determinate Signification. In the other Part he followed the Method of *Riverius*, one of the best of the Practical Physicians: for the Signs he mostly referred to that Author; but the Causes and Method of Cure he handled with the most convincing Force of Reason and utmost Elegance. And all this he did with much Clearness; for what he delivered, was built on the *Bellinian* Principles, and the Improvements he had himself raised on that sure Foundation. The Forms of Prescription which he dictated, under the Head of each Disease, were admirably well

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suited to their Intention, and given rather as Patterns or Examples, than as Rules to be tied up to; for a Person well-grounded in the Theory, and the Reasons of the Composition of Medicines, will at any time know how to vary according to the different Indication of Symptoms, and as Opportunity supplies him with Materials.

THESE Excellencies in his *Colleges*, as they are called at *Leyden*, soon procured him abundance of Scholars; and under our Professor were formed most of the great Physicians, who now practise amongst us with so much Applause. The Students that attended his Discourses, were not satisfied with hearing only; but also procured Copies of what he taught them by word of mouth, and that at a great Price, of such as were able to take down what he said in Short-Hand. By these means, after the Doctor's Death, these his Lectures appeared here in Print: the Title the Publisher

lisher was pleased to prefix to them, was, *Elementa Medicinæ Physico-Mathematica*: But this Impression was soon called in, for the sake of making a particular advantage of it for some of the Doctor's Relations; and it therefore becoming very scarce, our industrious Neighbours the *Dutch* were encouraged to send us over another Edition, tho not greatly differing from that of *London*.

BUT having by us some Manuscripts taken from the Doctor's own Hand-Writing, under his own Direction and Approbation, and which it appears neither of those Editors had the advantage of; we were prevailed on to attempt the following Translation. In performing which, we have endeavoured to give the Author's Sense in as plain and perspicuous a manner as we were able; tho, we must confess, notwithstanding all our Helps, we met with some Places sufficiently obscure.

Nor

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Nor do we question in the least, but in some others the Doctor might have found reason to alter his Opinion, if he would have given himself the trouble of making a Revival of what he had formerly written. However, as it is, we here offer it, as the best Piece of its kind extant, for a Guide in their Studies, to all such as intend to make Physick their Profession; it being designed for that purpose by its Author, who, by the Confession of all equal Judges, as he excelled in the Knowledge of his Art, so he was one of the most successful Practitioners of the Faculty.

TO conclude, Whatever Defects or Errors there may be in this posthumous Work of the great *Pitcairn*, we hope they will in time be supplied and amended by the happy Labours of such who shall follow him in the same rational Method of Inquiry here used. And this we are made to expect chiefly from those of our own Nation, by reason

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we have observed some laudable Attempts of this kind already begun amongst us. However, since the Animal System is the most complicated of any Part of the Universe we are at present acquainted with, it will be prudent in all that shall endeavour to give a Rationale of its Operations, not to be too precipitant in forming their Conclusions. Let them imitate the Conduct the Great Sir *Isaac Newton* has observed, in the noble Discoveries he has made in the other Parts of Philosophy. And this we are led to say, because some, who would be thought to proceed on his Principles, seem not to have had the same Caution in their Searches after the Knowledge of Nature. Let them therefore carefully peruse his immortal Writings: there they will find innumerable Instances of the best Rule which can be given; for he every where from some of the Appearances investigates the *Laws of Motion*, and then from those thus discovered, determines the rest of the Phenomena.

nomena. This is manifest by what he found out in the Nature of *Light and Colours*. But it would be impossible to give Examples here of this Rule in all his wonderful Inventions: let it suffice then to say, that he has thereby solved all the Irregularities in the *System* of the World; for from the Motions of the Primary Planets, he discovered that *Gravity* was not confined alone to our Earth, or uniform, as *Galileo* supposed, but diffused thro all the Portions of Matter; and that its Force decreased in a duplicate Proportion of the Distance of Bodies: And from hence, by his vast Knowledge in Geometry, he determines the *Motions* of the *Moon*, *Comets*, and *Sea*.



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mets, and Stars.





THE INTRODUCTION.

§.1.



CANNOT be apprehensive of giving a Distaste to any here, in taking the Freedom, unbiass'd by Favour or Prejudice, to inform my Pupils how it comes about, that Medicine has eluded the painful and elaborate Enquiries of many Ages past; and by what means it is to be raised to its wished-for Perfection, so far as the Life of Man is within our Capacities of being preserved.

§.2. TO speak freely then, it appears to me that the Art of Healing is of greater Antiquity than the Study of Philosophy; because when Men first began with Medicine, or Philosophy, as they were determined by their Regards either to the Body or Mind, the Reasons for the former they found perpetual, but for the latter only fortuitous and accidental. For they who in the beginning peopled the Earth, lived at first

on its Produce, and then on Flesh, were exposed to the Inclemencies of the Air, and the Vicissitudes of Heat and Cold; that is, they ailed, before they provided themselves Houses or Clothing: Those were their first Grievances, and these their first Remedies. But even the Cattel being short-lived, and then as obnoxious to Distempers as now, caused a necessity for this Art; and whosoever found out Relief for them, were accounted Benefactors to Mankind: for preserving even the Means of Sustenance, was put upon a Merit equal with that of saving a Member of the Community. But Men began not to philosophize till they had experienced the Operations of Remedies, and till they could with Security, and at their Leisure, search into the Relations of things, and emulate each other in intellectual Endowments.

§. 3. BUT because the antient Physicians attributed the Diseases to the Anger of the Gods, and that Astronomy was the first Science that was cultivated by the elder Philosophers, and that the Names of the Gods were in those Days affixed to particular Stars; it is very probable that the first Physicians began with their Enquiries into those Diseases which attended upon the Alterations of Seasons: From whence it follows, that in the Opinion both of the most early Philosophers and Physicians, that Reasoning in Medicine ought to be founded upon the same Principles with those which are made use of by Astronomers.

mers. And because in those Ages Philosophers were all of one Sect, and Medicine was older than Philosophy, it is manifest, that Medicine was also originally independent of all Philosophical Systems. But we shall more closely examine this Matter.

§. 4. IT is not just to deliver any thing as a Truth, either in the Practice or Theory of Medicine, concerning which we are at a greater Uncertainty than any Man is easy to be at in his ordinary Affairs : for the Care for Life ought to exceed that for our Estates. Hence it follows, that it is not allowable, either in Theory or Practice, to advance any thing into a Principle, which is Matter of Doubt amongst Mathematicians, and Men altogether clear of Prejudice : for no Man would consent to have his ordinary Affairs in such a Posture as hazards their Recovery to precarious Controversies : and of all our Possessions, Life is the most valuable.

FROM hence I conclude, that such Solutions of Physical Causes as Philosophers are wont to impose upon us, are neither necessary nor useful to Physicians ; for these are such as the Leaders of their several Sects have wrangled about to no manner of purpose, from the Beginning of the World even to our Days.

§. 5. NOR ought this to seem strange, because the Leaders of Sects apply themselves immediately to the real Natures, and abstruse Causes of Things, without any regard to their

manifest Properties; so that using a great many *Postulates*, and having but few *Data*, they cannot but fall into a strange Diversity of Opinions. It is manifest to all who have been more than indifferently acquainted with the Mathematicks, or in the Practice of Medicine, that our Knowledge of things reaches no further than their Relations to one another, and those Laws and Conditions of Exertion, whereby they act, or are acted upon by one another: I speak of such as are corporeal. Now those Powers and their Conditions are discoverable only by their Actions and Re-Actions upon one another; for the Actions and their Consequences are the *Data* by which we find out their Laws of Exertion: but as for that *Physical Cause*, and *Nature* of things, so much hunted after by Philosophers, it is an *unknown Somewhat* in the Things themselves, from whence they imagine these Powers to proceed. But as the Knowledge of that is not attainable without a previous Acquaintance with its Powers and Conditions of Exertion, nor is it of any force but by such Powers; it therefore follows, that whilst such Powers are unknown, that must also remain undiscover'd; or if it were found out, it would be of no real Service. And therefore it concerns Physicians only to investigate and reduce to Rule those Powers of Diseases, and of Remedies, which are discoverable by their Operations; and not to labour in the search of such *Physical Causes*, as are deducible only from a previous Know-

Knowledge of the Conditions of their Exertion ; and which being found out, can be of no service in Practice.

§. 6. IT has therefore availed nothing to our Forefathers in Medicine, that they espoused any particular Sects, and grafted a Science upon Conjecture and erroneous Opinions, which in its own Nature is as remote as possible from the ordinary Conduct of Study. By this Mistake it is come about, that Medicine falls short of its wished-for Perfection, and that long since it has stood condemned to Uncertainty, by those who do not consider that *its Errors are not in the Art, but in its Professors*. For after many had been wearied out with those Disputes which the vulgar Philosophy had for a long Course of time stirred up, and had found the Evil encrease, rather than admit of a Remedy, by a common Defection of Practitioners into the current Errors and Systems; they were easily induced to throw off all Regards to Persons so much involved in Uncertainty and Contradiction. And this is what has render'd the Art of Healing unimproved for many Ages : And this is what lies upon us to avoid, in order to be unprejudiced Physicians, and if we would shun the Imputation of being Slaves, or at any time of having been so.

§. 7. IT most certainly suits not that Art which alone presides over the Health of Mankind, to be incumber'd with the Conjectures and Dreams of Disputants; for no Man of

common Prudence would commit the Care of his Life to one, whose Reasonings appear false to most, and to very few so much as probable. But it behoves Physicians to follow rather the Example of Astronomers: These adopt not into their Art popular Notions, or Philosophical Harangues, nor in explaining the Motions of the Stars do they call in to their Aid any Fables concerning the Structure of the World, how much soever received by the Vulgar; but they determine the Powers and Tendencies of Bodies, whether in Motion or not, by the Observations which have been collected at great Distances of Time and Place, and by the Appearance of the heavenly Motions. Let us who are solicitous of deserving well in the Practice of Medicine, that is, of doing good to Mankind, labour after this most useful Example. Let us compare the Observations which have been made, and continue every where to be made concerning Diseases and their Remedies; and without any regard to the Reasons for particular Opinions, which bear no comparison to the Convictions of Sense, it concerns us to collect, from what has been, what may be, and what is to be done.

§. 8. THERE is no one, I presume, who is conversant in Astronomy, imagines any Assistance to be had from such Points as are even now-a-days tortured with frivolous Controversy; nor in demonstrating the Conditions

tions and Appearances of Motion, is any Help to be drawn from *substantial Forms*, *subtile Matter*, or a *fortuitous Concourse of Atoms*. But Astronomers, contented with a few *Postulates*, plainly shew, that the different Opinions of the Philosophick Sects do not affect them; nor is the Validity of their Demonstrations weakened, whether there be such things as *substantial Forms*, or not, and whether there does exist a *subtile Matter*, or not: And shall we doubt whether the Art of Healing may be improved by the Conduct of the same Rules? Nor is it just to imagine the lesser Portions of Matter, which are the Subjects of a Physician's Enquiry, to be less conformable to those Laws, which Astronomers have found to hold certain in greater Bodies. The Nature of Matter in all Bodies is certainly the same, and the Matter of one Body may easily be made the Matter of any other Body of what kind soever; and therefore all Bodies, how great or small soever, are liable to the common Influences of Motion and Alteration: From whence it is a Consequence, that the Laws and Affections of the Solids and Fluids in a human Body may also be determined by a due Collection of Observations, and a right Use of them when made.

§. 9. WHOSOEVER considers with an unprejudiced Mind, what has been hitherto said, will allow without Hesitation, that no-

thing ought to be advanced into a Principle in Medicine, which is not upon an equal Certainty with the Objects of Sensation: for it is not fit that human Life should be left at greater Uncertainties, than matters of Curiosity. I shall just touch upon some of those Points, wherein our Forefathers, thro too much Partiality for a favourite System, have rashly admitted what has wanted the Evidences of Sense, that others may avoid the Mistakes which have carried those Great Men into Error; and all these may be reduced almost to this one, That they have taken for granted, what has been matter of dispute amongst Men of Learning, and Persons without Prejudice; or what has been supported by Testimonies inferior to those of Sensation.

§. 10. OUR Predecessors have borrow'd from their Systems the Notions of a *Plenum*, *occult Qualities*, and a *Power of Attraction*, not subordinate to any Laws; and they have taken pains to impole both upon themselves and others this Adage, that *A Physician begins where the Philosopher ends*; which, restrained to the Leader of a Sect, is false. Miserable was the Condition of our Art in those Ages, when it was deformed with the Perplexities of Words and Things: Men of *Genius* were insolently fettered by an intellectual Slavery, and forced to sacrifice Acquisitions in human Literature, obtained by indefatigable

gable Studies, to the trifling Corruptions of Sect-Leaders ; and many brave Spirits have prostituted their Names amongst Sophisters, which ought to have been enrolled in eternal Honours for the Preservation of their Fellow-Creatures.

§. II. BUT how wretched soever were the Interests of Medicine in those Times, yet the Happiness of the present Age in that respect will not justify any extraordinary Exultation over our Predecessors : For after so many additional Assistances from Botany and Anatomy, and a new Face of Things from the Improvement of auxiliary Arts ; yet the antient Practice is still our Standard. The Introduction into our Profession of a *Farrago* of Notions not attested by sensible Evidence, but supported only upon Conjecture ; that is, in one word, a Bigotry to some System, has been charg'd to the Corruption of our Forefathers : but we who pretend to have shook off such a mischievous Partiality, can we boast of having been more lucky in the advancement of our Profession ? Not one jot. But after that Plague, with which a barbarous People had almost laid waste the Commonwealth of Literature, was with an incredible Turn of Fortune expelled, and the Interests of Medicine, by the Virtue of some Men, brought into a much more hopeful Posture,
with

with every thing that could be hoped for from knowing the Circulation; yet a Fondness for some particular System, has hitherto robb'd us of our reasonable Expectations from that Discovery, and deprived us of a Satisfaction next to the highest Mankind ever knew since their Origin.

§. 12. IT has often to me been matter of Admiration, that so many learned and ingenious Men could point out the Mistakes of the Antients, for a Warning to others, and not be able to avoid them themselves: They have proscribed indeed, and expunged *occult Qualities*; they have spurned away the *Abhorrence of a Vacuum*, and the Jingle of *substantial Forms*; they have notwithstanding introduced *occult Ferments*, and an *Aptitude of Pores*: So that by mere wishing well to the Profession, rather than by cultivating it with any laudable Industry, have they long since brought it to such a pass, that the Art of Physick seems to be lost within it self. For what difference, I pray, is there between *unknown Figures* and *occult Qualities*? How differs the *astral Influences* from the Operations of a *subtile Matter*? What is more ridiculous, than to give a power to some Vessels to attract certain Fluids; or to assume to our selves a power of fitting Fluids to a certain Configuration of Pores, when we are not able to account for
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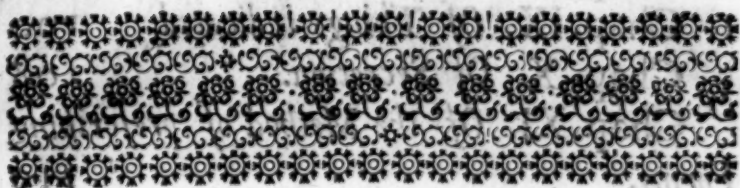
Matters in any other manner? Lastly, which *Sett* can we imagine the *Fear of a Vacuum* to be of most service to, that which accounts for it from ascribing to every Body a power of rushing into the deserted Space; or which has filled the World with a *subtile Matter*, to the share of which alone that Province is assigned, and which exceeds all others together in Quantity? Who, that has rejected the *Antipathy* and *Sympathy* of the Antients, can bear to hear Men harangue upon the *Enmity* or *Friendship* of two kinds of Air meeting in the Canals of our Bodies? Who observes not, that the natural and the foreign Air performs the same, as the *innate* and *adventitious Heat*? But it is irksome to dwell so long upon a Topick so well known. But this only I shall not grutch to add, That it is in my power to demonstrate, that there is no Ferment in the Glands of a human Body; and that all Pores, and all Orifices, are of the same Figure; and therefore that the diversity of Figures and Ferments, introduced by the Slaves to Systems, can be of no manner of use, either in the Theory or Practice of Medicine.

§. 13. IT remains therefore that we prosecute our Studies in Medicine, not as it is clogged with these Figments, but as it is attested by Experience; and that we suffer not our selves to be unwarily carried away from
Truth,

Truth, by the Decoys of a System; or to prostitute the Dignity of our Profession to the vulgar Conceptions: But let us at length assert our Liberty, and throw off from our Enquiries, the Narrowness and Uncertainty of a School-Bigotry.



THE



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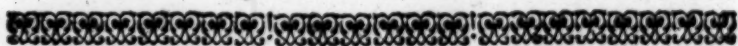


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The

The Philosophical and Mathe-
matical Elements of P. H. Y.
SICK, &c.

BOOK I.

CHAP. I.

Of the Principles of Bodies or Elements.

§. I.  HERE only suppose all Matter to be divisible, and that every Particle of Matter is likewise divisible, from the last Prop, of the 10th of Euclid. Hence it follows:

I. *THERE is no Part of any one Body, or no Portion of Matter so small, but that a Part of another Body may be exactly as small. Wherefore there is no Part of Matter so subtile, but that any other, the most gross, may be di-*

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vided into Parts no bigger than the Parts of that subtile Matter.

II. BUT because I have suppos'd Body or Matter to be divisible, and Division cannot be made without Motion, a *Possibility of Motion* is also necessary to be suppos'd. And because a Physician is to be conducted by his Senses, he cannot but take it for granted, that Bodies are actually mov'd, or that there is such a thing as Motion.

III. BUT no Body whatsoever is mov'd of itself, or of its own accord. For when it is not under the Influence of any other Body, there is no Cause by which it should be determin'd one way more than another, therefore of it self it will not move any way; and consequently every Body will remain at rest, if not disturb'd therefrom by some foreign Power. Upon the Application of which foreign Power, the Body mov'd will proceed in the same Direction as the impelling Force; and therefore likewise that Body that is either impell'd by no other, or equally press'd on all sides, must of necessity continue at rest.

§. 2. AND because we are inform'd by our Senses, that after various Modifications of Motions, it comes about, that some Bodies are *solid*, and others *fluid*; and that there are none but what are of one of those kinds, or approaching to one or the other of them; and that that System, which constitutes the human *Fabrick*, and whereof we are so solicitous,

Chap. 1. *Of the Principles of Bodies.* 3

citous, is compos'd of both these : It will be worth our labour to be inform'd of those constant Affections of such, with regard to one another, as are of moment to those who practise in Medicine.

§. 3. EXPERIENCE demonstrates it to us, and the common Sense of Mankind, *That all material Bodies are heavy*, and that they tend towards the Earth, if not interrupted, in strait Lines; yet, so that thro the same *Medium* some fall faster, and some slower, or do more or less gravitate. Thus Gold is said to be specifically heavier than Cork, because under equal Dimensions, the Gold will sink in, and the Cork swim upon Water: and therefore the Gold is also specifically heavier than both the Cork and the Water, since it has been demonstrated by *Archimedes*, *That a solid Body will float any where in a fluid of the same specifick Gravity, and that a lighter Body will keep above a heavier.*

§. 4. FOR Reason convinces us, that of all Bodies falling toward the Earth, *those which have the like number of equal Parts, have equal Gravity*; since the Gravity of the Whole, is the Sum of the Gravity of all the Parts; but any two Bodies have an equal Number of equal Parts, if under the same Dimensions there is no Interval destitute of Matter; whence it follows, that as no Portion of Matter is so small, but that Body, in which it is contain'd, may be wholly divided into Parts

equally as small, there can be no reason for the Descent of *these*, which is also not a reason for the Descent of *that*.

§. 5. F R O M hence it may be concluded, *That those Bodies which do not equally gravitate under the same Dimensions, do not contain the same number of equal Portions of Matter: And therefore, when we see that a Cube of Gold does subside in Water, when an equal Bulk of Cork swims upon it, the Gold must have a greater number of equal Parts of Matter under the same Bulk, than the Cork; or the Cork must have a greater number of Vacuities, void of Matter (and which it has indeed a great many) than the Gold; and that there are also in the Water greater Vacuities than in the Gold. For was it otherwise, and the Water of equal Density with Gold, that could never sink to the bottom, in how large a Portion soever.*

§. 6. W H E N C E also it follows, that an ethereal subtile Matter filling the Pores of all Bodies, and freely passing thro them, is a mere Figment. For were there any such Matter, and the Air full therewith, the Density of Air would be equal to the Density of Quicksilver, and it would as much resist the Motion of a piece of Iron downwards as Quicksilver itself; and therefore could neither Iron, or any other Body fall thro it, which is contrary to all Experience. But yet to make this matter more clear, it is worth taking notice, that there

Chap. i. *Of the Principles of Bodies.* 5

is in every Body a Power of Resistance, whereby, as much as possible, it preserves itself in its present State of Rest, or an uniform direct Motion. By this natural Property it becomes a Difficulty either to put a Body into Motion, when at rest, or to stop it, when in Motion. Hence we find that a Sphere of Lead upon a Plane, will, in some measure, resist being put into Motion: And whereas a Motion parallel to the Horizon, towards the East for instance, is not opposite to that towards the Center, *i. e.* its Gravitation, (for a Body may be moved either way) that Resistance cannot arise from its Gravitation. Therefore, since nothing else is in this Sphere of Lead, to which can be attributed its Power of Resistance, but the Quantity of Matter contain'd therein, that must be accounted the Cause of its Resistance. Now if *two Bodies, which have equal Quantities of Matter, be mov'd horizontally, in Directions opposite to one another, and meet with equal Velocities, they stop together, or, the Momentum of their Resistance is equal; so that they must be equally heavy:* whence it follows, that such Bodies are equally heavy, that have equal quantities of Matter; and if there be no Vacuities, all Bodies under equal Superfices, as for example, *all Spheres of equal Diameters, will also contain equal Quantities of Matter; and therefore, from the foregoing, will be equally heavy: that is, a Sphere of Lead would be no heavier than a Sphere of Wood of equal*

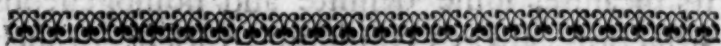
Bigness, if there were no Vacuities in the Sphere of Wood; which is contrary to all Experience, and therefore is there no such thing as a subtile Matter filling the Pores of all Bodies.

§. 7. HENCE it evidently follows, that their Opinion is not supported by sufficient Authority, who, with *Waldschmiedt*, pronounce all Matter to be divided into three kinds of Bodies; to wit, such as emit, transmit, or remit the Light, and that the Pores of all are fill'd by the help of those Bodies which are compos'd of those emitting Light. For if all Pores were full, there would be no Body that could transmit Light. And hence we may easily gather it for a Certainty, that a subtile Matter is not the Cause of Fermentation, or of the intestine Motion of Bodies, as some call it; and that *Waldschmiedt*, with his Disciples, must seek for other Causes of such Appearances, and that all Explanations by Physicians upon so uncertain a Theory must be insufficient. Wherefore, in our following Institutions, we shall not only reject this Hypothesis for the forementioned Reasons, but also all others, how probable soever, because we conceive the Appearances of Diseases and their Cures may be more distinctly taught without the help of any Philosophical Conjectures.

§. 8. AND for this Reason I have premis'd these few Hints, that such as study Medicine may not be at a loss to answer those,
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who are not so industrious in improving that Science, as in extolling the miraculous and incredible Effects of their favourite Hypothesis of a subtile Matter.

§. 9. I DO advise indeed all diligently to consider the Principles of the *Cartesian* Philosophy, and to compare them with those of *Democritus*, so far as Geometry will conduct them, especially that Part of it whereby are demonstrated the Laws of Motion; and what they shall find most conformable to those Laws, may be reserv'd as of great service in the true Theory of Physick: and therefore, as a Qualification for the Study of Medicine, I rather recommend an Acquaintance with the Mathematicks, than with the Philosophy which is now so much in Esteem.



C H A P. II.

Of Health.

§. 1. **W**E require it to be granted first, that the Blood which is thrown out of the Heart into the Arteries, does return thither again by the Veins; or that there is a Circulation in every Animal.

Secondly, That those who enjoy this Circulation have Life; and those who are depriv'd

of it have not Life; and that Life itself is either this Circulation, or this the measure of it.

§. 2. THESE being granted, I assert, that Medicine is *the Art of making Life indefinitely long*. Hence I affirm, Life indefinitely long is the Height of Health, or the perfectest Health, which every one so much courts: For since Disease is an approaching Death, and that the Height of Disease is Death, Life indefinitely long will be free from Disease, that is, from a continually approaching Death, which is a most healthful State. But because of a healthful Person, we cannot say he will live an indefinite Space of time, before he has lived such a Space, if we measure Health by Longevity, it is necessary to a Life indefinitely long, *i. e.* to Health, to substitute, as its measure, some definite and homogeneous Affection, always consistent to itself, or such as is at all times the same; so that what it is perceiv'd to be at one time, it may be perceived to be the same at any other time.

§. 3. AND this Affection is an *Indolence of Body*, or an Absence of Pain; and therefore since a Life indefinitely long, or eternal, is entirely without Pain, it follows, that an Indolence of Body, or an Absence of Pain, can be the only measure of Health: whence it is manifest, that no Man can enjoy a perfect Health; and those only can be pronounc'd healthful, who are least afflicted with Pain, or less than usual.

§ 4. HENCE it appears that Medicine has been ill defin'd by all the Writers of Institutions, to be an *Art of preserving, as much as possible, the present Health, and of restoring it when lost*: for as Health has not by them been previously defin'd, such a Definition of the Art of Medicine can be to no purpose. But whereas the Definition of Sennertus, and some others, takes it for granted, that Health is accompanied with a Power of exerting those Actions, which, according to Nature, are necessary thereunto; that Definition is defective, for want of having it previously defined what Nature is, or what is according to it.

§ 5. AGAIN, those Institution-Writers do amiss, who endeavour to explain Health, before having yet explain'd what is Life, because *Health is perfect Life, or the longest Circulation of the Blood, or a Life free from Pain*. Nor ought it in the least to affect this our Opinion, what many pronounce concerning the Eternity of Pain some are to live in hereafter, because our present State is very different from theirs, who may be miserable on the other side the Grave.

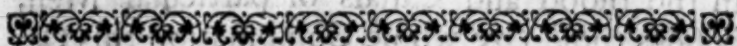
§ 6. SOME who have oblig'd us with their Institutions of Physick, teach that the Subject of Health are the Parts of a living Body: which must be false, because not *Part of the Body*, but the *Body itself* lives; the Circulation of the Blood being so circumstanc'd, in passing from the Heart thro the Arteries, and returning
again

again by the Veins, that it cannot be pronounc'd of *any one Part*.

§. 7. N O R have they less been mistaken, who have taught that the Parts of a Body are twofold, *viz. similar and dissimilar*; for there is no one can affirm a Part to be *dissimilar*, and therefore is this Division needless: and again, when by a dissimilar Part they ought to understand it compos'd of other different and heterogeneous Parts, they notwithstanding confound it with an Organ, and that they define to be what is capable of acting. But every Part is capable of a perfect Action; for a Fibre contracts itself in the same manner as a Muscle; and, in one word, an entire and perfect Action, which is attributed to an Organ, is compounded of many similar Actions of the Parts of that Organ.

T H E Body therefore is much more justly and advantageously divided into Parts *containing and contained*, that is, into *Canals and Fluids*.

§. 8. A N D lastly, It appears to have been ill contriv'd by the antient Fathers in Medicine, to divide the Body into Parts *containing, contained, and impelling*, because these last are contained. Medicine is likewise ridiculously distinguish'd into *Pathology, &c.* For a perfect and adequate Notion of a Constitution, it is not in our Faculties ever to arrive at.



C H A P. III.

Of Temperaments, or Constitutions.

§. 1. **I**T has been affirmed, that a human Body is composed of Canals, conveying Fluids of different kinds. These Canals have a determinate Capacity, Number, and Thickness of Coats, Elasticity, Figure, and other Properties; from whose different Configurations they obtain the Names of Arteries, Veins, Nerves, Fibres, Lymphaticks, Bones, &c.

§. 2. **A**LL Liquids have a determinate Degree of Fluidity; and they are compounded of Parts that are small, which can easily roll over one another, or be easily put into Motion.

§. 3. **T**HE Canals and Fluids of a human Body have all the forementioned Properties of Canals and Fluids in common: and if they had them in the same degree, as I may so speak; for example, if the Blood of all Men consisted of Parts equally small and slippery, then all Men would have the same Temperament. For we may suppose the same as to the Canals, and that all Men were equally healthful; but whereas every one knows it to be otherwise, it is requisite that some Properties should be
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in the Blood and Canals of particular Men, besides those (by whose Combination this Canal is call'd an *Artery*, that a *Vein*; this *Liquor Blood*, and that *Chyle*) by which Properties this Man is more inclinable to one Disease, and that to another. And these Properties are call'd *Temperaments*; whence it follows, that all those who have any particular Temperament, are beginning to be diseased, or to deviate from a perfect Health. And a *Temperies*, so called by Physicians, is an *Intemperies*, or a beginning Disease; which is a Remark that may be of use to those who would be conversant in the Practice of Medicine.

§. 4. I AFFIRM therefore that the Temperament of every Man is a Change (whatsoever it be, and which is to be discovered by some sensible Appearance) of those Conditions in the Canals and Blood, that are required to continue a Life destitute of all Pain.

§. 5. BUT since those Conditions may be infinitely varied (for the Proportions of different Bodies, constituting the same Fluid in any given Quantity, are without number) and which it is of the utmost moment for our Health to be acquainted with, tho' surpassing all our Industry; I shall therefore explain some of those most constant and most remarkable Changes, in a manner more clear and convincing than has yet been done by any others: requiring it to be remembered, that there are many besides worth being observ'd, which
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may and ought to be accounted Temperaments, and which administer to the Rise and Growth of sundry Diseases.

§. 6. T H E Writers of Institutions remark to us four Temperaments, as most considerable and necessary to be regarded in the Practice of Medicine, scil. *Bilious*, *Melancholy*, *Pituitous*, and *Sanguine*; but they were mistaken in ascribing these, in common to the Canals and Fluids, because they are peculiar only to the Fluids; and they were likewise in an Error in assigning any Temperament for *Sanguine*, because such can be only a *Plethora*, or a greater Quantity of all the Fluids, composing the Blood, than ordinary.

§. 7. T H E R E are therefore three kinds only of Temperaments to be observ'd in the Fluids of a human Body: but that this may the better appear, it ought to be defin'd what is a Temperament of the fluid Parts, which is certainly no other than that determinate Fluxility of the Blood, which allows, that the Parts to be secern'd from it, may be secern'd some easier than others, in any given Velocity of Circulation. Whence it follows, that a *Bilious* Temperament is that degree of Fluxility of the Blood, which allows, in a given Velocity, the Bile to be separated in the Liver naturally constituted in a greater Proportion to the other Secretions, than is common to most other Men of the same Climate; and this

this Temperament is wont to be call'd *Hot and Dry*.

§. 8. B U T a *Melancholy* Temperament is that Degree of Fluxility, which allows in a given Velocity of Blood, and a naturally constituted Spleen, a greater Secretion than is proportion'd in other People to the urinary and cutaneous Discharges. And this is call'd a *cold and dry* Temperament.

§. 9. A P I T U I T O U S Temperament is, when in a given Velocity of Blood from the Heart, the Proportion of *Saliva* secreted, is greater than the Proportions of other secreted Fluids: And this Temperament is *cold and moist*. But it must be observ'd, that herein we suppose Men in all other respects healthful, and not influenc'd by any external Causes.

§. 10. A F T E R the foremention'd Divisions of Temperaments attributed to all Parts, but agreeing indeed only to the Fluids, the Writers of Institutions go on to explain the particular Temperament of the solid Parts. In the very Performance of which they sufficiently discover the forementioned Temperaments not to belong to the Canals or Organs, as they imagin'd, but to the Fluids only.

§. 11. F O R in the first place they say the Heart, Lungs, Arteries, Liver, Spleen, Veins, and Kidneys are of a *hot* Temperament. That these Parts are actually hot in a living Person, I will not deny; but that they are all

all of the same Temperament, that is, that their Canals, and the Fluids therein contain'd, have the same Properties, is false. For in truth, neither is the Heart hot or moist, but from the circulating Blood which passes thro it; nor the Liver or Arteries dry, any otherwise than from other Parts in company with the Bile.

§. 12. AND in one word, a hot Temperament is peculiar to those solid Parts only, which receive the Blood not far distant from the Heart; and therefore those are coldest, which it circulates thro at the greatest distance therefrom.

§. 13. THOSE are dry, whose Canals serving for Nutrition are very small, and remote from the Heart; but those are of a moist Temperament, which receive the Blood not far off, in large Vessels, as the Brain.

§. 14. IT remains that we add somewhat concerning the Temperaments peculiar to every Age: It is vulgarly said that the Age of Infants and Children is hot and moist, of Youth temperate, of full Growth to be hot and dry, and of old Age cold and dry; and these are to be regarded as in the same Person. For if this be with relation to different Persons, it is possible that one who is of a bilious Temperament may be as hot and dry while he is yet a Child, in comparison, as one who at his full Growth is of a moist and hot Temperament, that is, of a Plethorick Constitution.

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It is to be noted likewise, that with the same Force of Contraction in the Heart, those Men who are of the shortest Stature are hotter than those who are taller; for since the extreme Parts of the former are less distant from the Heart, than the extreme Parts of the latter, (and the same holds as to all correspondent Parts) and since the Velocity of Blood decreases according to its Distances from the Heart; therefore the Parts of a short Body will be hotter than the Parts of a tall one, if those Parts are taken which correspond with one another: for in the following Chapter I shall demonstrate, that the Heat of the Blood and of the Parts of the Body is proportional, *ceteris paribus*, to the Velocity of Blood at the same Distances from the Heart, and that Heat is the Effect only of the circulatory Motion of the Blood.

§. 15. HENCE it follows, that every one is hotter, *ceteris paribus*, when in Childhood than in Youth; and in Youth, or whilst he is growing, than afterwards, when he is arrived at Maturity; and therefore is it false, that Youth is the most temperate Age, as is generally asserted. As to what concerns the Moisture or Dryness proper to any particular Age, I would have it taken notice, that Infants and Children contain more Blood, in proportion to their Bulk and solid Parts, than Men, and Persons of a more advanc'd Age; (I speak always of the same Person, and the

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Difference of Age is only to be regarded) and since the serous Part of the Blood, or Moistening, or Caufer of Moisture, is almost a fourth of the red part or Coagulum, it follows therefore, that Infants and Children are in this Sense more moist than Youth, because they abound more with Serum.

§. 16. BUT that Infants and Children contain more Blood, in proportion to their Bulk, than Men, is from hence to be prov'd, That in them both the Bones and Cartilages are softer, and all the Fibres lax and slimy; and those Parts which in Men are solid, in Children are almost fluid, by means of so great a Quantity of Moisture or of Blood, (for under that Name I understand all Liquors that flow thro the Veins and Arteries) swelling up those Interstices of the Parts with Serum or Lymph, which upon full Growth grow solid. For the Solidity of the Parts cannot be any further increased, but by a Diminution of the Quantity of Fluid, because the solid Parts are made out of the liquid and moist; and therefore it is manifest, that the Bulk of the Body being augmented in all its Dimensions, the Quantity of Fluid must lessen, because out of that such Bulk of Solids is produc'd.

§. 17. BUT here it is diligently to be observ'd, that a bilious, melancholy, or a pituitous Temperament, is not to be attributed to the same Person, in respect to a different Age;
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but to different Men consider'd in the same Age, and in that chiefly of Manhood : for we will not, nor ought we to compare a Child with another Child, nor a young Man with an old; but a young Man with a young Man, and an old Man with an old Man, with regard to their Temperaments.

§. 18. AND lastly, As to Sex, either Male or Female, their Diversity of Temperaments ought to be consider'd, in relation to their Heat or Moisture, because these Properties only come under a Physician's Consideration, as to the difference of Sex.

§. 19. ALL Physicians that I know of give it out, that Men are hotter and dryer than Women : I grant it that Men are dryer, but deny that they are hotter.

§. 20. AND therefore I boldly pronounce it, that Women are hotter and moister than Men, because they contain more Blood, *ceteris paribus*, than Men; and that for the same reason whereby Children have more Blood and Moisture than Youth or Men, and as Children are hotter than both, because they have shorter Bodies; and so because Women are generally shorter than Men, they ought to be more diffus'd with Heat.

§. 21. HENCE we see, or rather, whenever we please, we may feel the Bodies of Women to be generally more soft, lax, and subject to encrease, than are the Bodies of Men: they are softer and more lax thro a greater

Chap. 4. Of Innate Heat, &c. 19

greater abundance of Lymph; and in a lesser space of time they arrive at a determinate Bulk, by reason of a greater Quantity of Fluid, of which the solid Parts are form'd; whereby in a lesser time is supply'd an equal, or in an equal time a greater Quantity of Nourishment. But a greater Quantity of Lymph and Blood will produce a greater Heat, as will be prov'd in the following Chapter; for I always suppose an equal Contraction of the Heart; and therefore it appears, that Women, in respect to their Bulk, have more Blood or Heat, and Moisture, than Men have. But that Disposition of Females, whereby once in a Month Blood is discharg'd by the Womb, shews that more Blood is in them than in most Men; because that menstrual Evacuation arises thro' excess of Blood, and not by means of any Ferment, as will hereafter appear, when we come to prove that there is no such thing as Fermentation in Animals.

C H A P. IV.

Of Innate Heat, Radical Moisture, and Fermentation.

§. I. **I**T here lies upon us to explain what Physicians ought to understand by these Terms, and not what they have under-

stood by them; for this has been done already by *Sennertus* and others to no purpose. By *Innate Heat*, ought therefore to be understood, that Attrition of the Parts of Blood, which is occasioned by its circulatory Motion, especially in the Arteries; wherein being propelled from a circular Base towards the Apex of a hollow Cone, with a Force begun in the Heart, it meets with a double Resistance; that is to say, against the sides of the Arteries, and from the preceding Blood.

§. 2. F O R whereas the Blood contains in it Parts which are fitted to excite Heat, whenever they can get at liberty, that is, if the Parts inclosing them can be got asunder; and whereas the Parts inclosing such Corpuscles cannot be got asunder, unless by some *Nisus* of the Parts of Blood amongst one another, whereby the Attrition and Abrasion of the cohering Particles is produc'd; it follows, that the *Heat* will be so much the greater, by how much such a *Nisus* and Attrition of the Parts amongst one another is increased. And with the same Resistances (that is, the Sections of the Arteries, and the Quantity of Blood remaining the same) and an increased Force of the Heart, and circular Motion of Blood, the *Nisus* and Attrition of the Parts of Blood amongst one another, must necessarily be increased; both by the preceding Blood being struck harder upon by the Protrusion of a succeeding Blood coming on with an increas'd

Velocity,

Chap. 4. *Of Innate Heat, &c.* 21

Velocity, and the occasioning thereby also more frequent Strokes against the Sides of the Arteries. By which means an increased Velocity of Blood encreases the *Heat*, and consequently does its *Heat* depend on its Circulation: But since the *Radical Moisture* is the Blood, the *Innate Heat* founded in that *Radical Moisture* is nothing else but the circulating Blood, or the Life itself of an Animal.

§. 3. BUT that this may yet be rendred more plain, it is necessary to reflect, that the solid Parts owe their Origin to the same Causes, by which they are afterwards encreas'd and nourish'd: for whereas Nutrition and Augmentation is an Apposition of Parts similar to those whereto they are added, the Matter fit for the Encrease and Augmentation of the Parts, ought to be similar to that from which the Parts had their Origin: But the Blood, that is, the Fluid in the Arteries and Veins, is sufficient for their Encrease; and therefore did it give them their Origin, and with their Origin those Properties common both to the Fluids and Solids, amongst which I account *Heat*. The solid Parts therefore have their Heat from the Blood in Circulation, because to this only they owe their Rise, Encrease, and *Heat*.

§. 4. FROM hence it appears, first, that *at the same Distances from the Heart, the Heat of equal Quantities of Blood will be as their Velocities.*

§. 5. **SECONDLY**, *In the same Velocities of Blood, the Heat will be reciprocally as the Distances from the Heart.* For since in homogeneous and similar Bloods, nothing else is required to disengage the Particles exciting Heat, but a *Nisus* and Attrition of Parts, produc'd by the Force of the Heart, to which is always proportional the Velocity of the Blood, and the Reaction or Resistance of the Arteries, and antecedent Blood; it follows, that if that Resistance or Reaction is not alter'd, which it will not be at the same distance from the Heart, then the Heat of the Blood will not be alter'd, unless by an Alteration of the *Impetus* or Velocity impress'd upon the Blood from the Heart: that is, as Effects are proportional to their Causes, at the same Distances from the Heart will the Heat of the Blood be proportional to its Velocity, whereby is demonstrated the first Proposition.

§. 6. **A G A I N**, in the same manner it may be shewn, that if the Velocities impress'd by the Heart are equal, there can be no Change in the Heat of the Blood, but from a diversify'd Resistance or Reaction of the Arteries, and antecedent Blood: but the Resistance of the preceding Blood is proportional to its Quantity, and its Quantity is reciprocally proportional to the Distance from the Heart (for the nearer the Blood is to the Heart, by so much the greater will be the Quantity between any given Place, and the Extremity of the Artery) and

and therefore the Resistance of the Arteries will also be so much the greater, by how much nearer they are to the Heart. For in this Case the Resistance is proportional to the Velocity, and the Velocity of the Blood is greatest at the least Distance from the Heart; and therefore it is manifest, what was in the second Place propos'd, *That the Heat of the Blood flowing with the same Velocity, is reciprocally proportional to the Distances from the Heart.*

§. 7. HENCE the Heat of the Blood may be consider'd as a Rectangle under the Velocity and the Distance, that is, if in two Persons the Velocity be as 3, and the Distances wherein we would determine the Heat be as much more in one as in the other, that is, be as 2 to 1; the Heat of one will be 6, and the other 3, that is, the Heat of the first will be double the Heat of the second. If the Distances of the first be as 2, and the Velocity as 4, but the Distances of the second as 3, and the Velocity as 1; the Heat of the first will be as 8, of the second as 3, and so the Heat of the first will be more than double the Heat of the second.

§. 8. HENCE it appears that *Waldschmidt* was mistaken, when he determined the *Innate Heat* to be the Remains of the Blood rarefy'd in the Heart; for when it is demanded whence the Blood comes by its Heat, a Reason is to be given, that accounts also for the Heat in such Remains: for they have a

Cause of Heat in common to the rest of the Mass; nor is there any Ferment in the Heart that gives Heat to the Blood, because it would be wash'd out in every Contraction; nor does the Blood any otherwise rarefy in the Heart than in the Arteries, but as it is impell'd from thence into these, in such a Quantity as to distend them: so in like Quantity it runs from the Auricles into the Heart, so as to extend it, until, by the help of the animal Spirits, it contracts, and again empties itself; so that there is left no Blood in the Heart, after its full Contraction, different from the Blood thrown out; and no Remains of Blood reside there continually, by reason they must be necessarily wash'd away by means of the constant Stream of Blood always passing thro the Heart, and the perpetual Contraction of the Heart itself. For these Reasons, I say, there can be no Ferment in the Heart, and even no manner of Separation made of the Parts of Blood therein; or if there was any made, it would necessarily be resorbed, and in every Contraction of the Heart thrown out again: unless we can ascribe to the Heart some Partiality and Commiseration, whereby it preserves some particular Parts from Expulsion, while it has no regard to the much greater Quantity. But it may be worth our pains to examine that Opinion of the Moderns, which will have the *Innate Heat* to be the Effect of the Blood's being put into Fermentation

mentation by a *subtile Matter*, and maintained by its perpetual Agency ; for many of the Moderns, and amongst them the most eminent, assert, That the Cause of Heat in the Blood, is an Action of the *subtile Matter* ; which, because it does not find rectilinear Pores in the Blood, corresponding with the rectilinear Directions of its Motion, variously agitates it, and endeavours to separate its Parts from one another : whereby it excites that intestine Motion therein, which produces its Heat.

§. 9. IT is manifest these Philosophers thought the *subtile Matter* to be reflected by the Parts of our Blood : for that it does not find rectilinear Pores in the Blood, must proceed from its meeting with other Parts of the Blood at the opposite Orifice of the Pore (which may be here considered as a Canal) which Parts not having sufficiently large Pores, do thereby hinder the Progress of the *subtile Matter*. But if this was the Cause of Heat and Fermentation in the Blood, then from the same Cause it would heat and ferment when out of the Vessels, as for instance, in a Bason ; for even then it is the same kind of Body as before, and might have the same intestine Motion and Position of Parts in the Bason, as in the Artery ; and therefore in the same manner would it resist the Impression of the *subtile Matter*. But every one's Experience teaches him, that
Blood

Blood out of the Vessels, loses all that Heat, and imaginary Fermentation: and this ought to be a convincing Argument for overturning that Opinion. But let us a little further examine this Matter.

§. 10. IT ought therefore to be considered, that the *subtile Matter* (taking it in the *Cartesian* sense, for a Reality) does encompass all Bodies, and equally press upon them on all sides. From this equal Pressure upon all Parts, the most judicious *Cartesians* have deduced the Cause of the Firmness of Bodies, or of the rest of their Parts, with regard to one another: for as the Air which is excluded from the interiour Surfaces of two Marbles rubbed together, and on all sides surrounds them, is the Cause why they cannot be easily pulled asunder; so the *subtile Matter* surrounding all Bodies, prevents their Parts from separating from each other: and therefore if we allow the Existence of such a *subtile Matter*, it will hold together in a Contiguity, all Parts that have once cohered. And if it be admitted into the Pores on one side of any Portion of Matter, yet because it is admitted also into the Pores of opposite sides, or into the Pores of the contiguous Parts, it is therefore certain that such a Portion of Matter will be held together thereby: from whence there can arise no intestine Motion, or Heat, or Fermentation, from such a Cause.

§. 11. IF there was indeed any Gravity in this *subtile Matter*, and that Gravity, as in the Air, mutable; it might perhaps some time or other be the cause of some Changes, as the Air is; but as the *subtile Matter* can undergo no Change of Gravity, because it has none, it cannot therefore be more heavy in any one Place or Time than another. Besides, it compresses all Bodies, in all Places and Times, with an equal Force; it cannot therefore be the Means or Cause of Fermentation, or any kind of Change.

§. 12. BUT it is matter of wonder, that so many learned Men should think our Blood to be of such a nature, that the Parts of the *subtile Matter* cannot find therein Pores sufficiently pervious, or rectilinear, and suited to their Motions; the Falsity of which may be demonstrated by the following Experiment.

§. 13. IT is manifest, that if there be any such thing as a *subtile Matter*, it must be the Cause why heavy Bodies descend towards the Center of the Earth; because they are thrust downwards by the *subtile Matter*, that has of itself no Gravity, moving swiftly round the Earth: and by flying off in Tangents to the Earth's Periphery, this *Matter* forces down those grosser Bodies into their proper Place, which conform not so easily to its own Motion.

§. 14. IT is also manifest, that Blood covering any Piece of Metal, does not render
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that Metal e'er the less heavy than before; for its Gravity is the same so covered, as when not covered with Blood: whence it follows, that the *subtile Matter* does with equal Facility pass thro the Pores of the Blood, as the Pores of Air. For unless it passed through the Pores of both with equal Ease, the Metal would not be so heavy when covered with Blood, as when exposed naked to the Air; and therefore it must be true, that any Body whatsoever does equally gravitate when covered even with Marble, as when open to the Air: and no body yet has imagined the Pores of Marble to be more capacious than the Pores of the circulating Blood; for if they were, the circulating Blood would be heavier than Marble. These Considerations may be sufficient to rescue the Cause of Fermentation in the Blood from any Action of the *subtile Matter*; and more especially when it does not yet appear that there is any such *subtile Matter*: nor is it yet certain, that there is any Fermentation of the Blood; but much rather, on the contrary, it is probable that there is no such Fermentation at all.

§. 15. Which, to make more manifest, it may be necessary to observe, That real Fermentation is a *mutual Action of an Alkali and an Acid upon one another with Ebullition*, whereby Oils are changed into burning Spirits. Thence it is, that we experience, from the unfermented Juices of Vegetables, Phlegm and Oil may be drawn,

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but not a Spirit; but if they undergo a Fermentation, then an Oil will not arise, or very little, but an inflammable Spirit, like That of Wine. However, we obtain 'em both changed by Fermentation into Spirits; for inflammable Spirits are *Oils intimately mixed with a Phlegm, by the mutual Actions of an Acid and an Alkali.* And this appears from hence, that those inflammable Spirits will burn quite away, (from whence they are so called) by reason of the Oil which they contain, the Phlegm remaining after Deflagration; and because from those burning Spirits an Oil may be separated: for if the rectify'd burning Spirit of any Vegetable be put into a Glass well stopped, an Oil may be seen floating upon the Phlegm, but the Spirit will seem to be lost to the Taste. And therefore it is sufficiently plain, that after any real Fermentation, there may be obtained an inflammable Spirit; but from the Blood no inflammable Spirit can be drawn, but only a urinous one. From whence it naturally is to be concluded, that there is no real Fermentation in the Blood.

§. 16. BUT this Truth is no less confirmed from this, That every true Fermentation, as we have said, is a mutual Action of an Acid and an Alkali upon each other; and therefore can there be no true Fermentation where either of these is wanting: but in the Blood of a healthful Person there is no Acid,

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as will appear to any one who will be at the trouble of distilling such Blood.

§. 17. AND this is sufficient for the Conviction of those who seek only the Truth. But because many contend merely about Words, and insist upon it, that there is such a thing as Fermentation in the Blood, although there is no Acid in it; such a Fermentation, I mean, which by *Willis* is defined, *An intestine Motion of the constituent Particles of any Body*: I shall therefore examine how far this Definition is applicable to the Motion of the Blood.

§. 18. I AFFIRM therefore, that there is no intestine Motion of Particles in the Blood, distinct from that Motion which it receives from the Contraction of the Heart: that is, there is no intestine Motion in Blood, that does circulate; and it universally holds, that there is no intestine Motion of the Particles of any Fluids contained in a moving Vessel: indeed if a Fluid be contained in a moving Vessel, the Parts of that Fluid will partake of the Motion of the whole. But such a Motion is not that intestine Motion we here are speaking of; which if we make appear, a great many Solutions of Phenomena amongst our modern Physicians, which are built upon this intestine Motion, as on a sure Foundation, must come to nought.

§. 19. THAT I may make good my Promise, I desire it to be considered, that a Fluid

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is a Body whose Parts yield to any other Body, and in so giving way, are easily moved amongst one another. This Definition agrees with the Hypothesis of Archimedes, who advances, *That such is the Nature of a fluid Body, whose Parts are equally at rest, that those least pressed upon will give way to those more pressed.* For this Hypothesis manifestly takes it for granted, that the Parts of a Fluid least pressed, will give way to the Parts most pressed upon; that is, (since the least press'd, in respect to the more press'd, are at rest; for a lesser Motion in comparison to a greater, may be so accounted) the quiescent Parts of a Fluid will give way to any Body in motion. From hence it follows, that if any Fluid is equally pressed upon on all sides, (and concerning such a one we are speaking; because a human Body, and all the Fluids contained therein, are equally pressed upon on all sides by the Air, and all other ambient Fluids) then all the Parts of it are also equally pressed upon, and continue at rest with respect to one another. Let therefore there be a Fluid uniformly and equally pressed upon in any spherical Vessel, if any one Part of it begins to move, all the Parts in the same Position, and like Distance from the Center, will also be put into motion; because it is possible to suppose, and we do suppose it, that the Fluid, and all its Parts, are equally pressed upon on all sides, and that the Vessel is without Motion: and
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where the Pressures of all Parts are equal, there must arise a Motion of all the Parts together, or of none at all.

§. 20. IF therefore all like Parts, which are at the same Distances from the Center of such a Sphere, be moved, they will be moved either towards the Center, or towards the Circumference; or keeping in the same Distances from the Center, they will move towards some Point; for instance, either East or West. But when a Liquid is supposed homogeneous, all its similar Parts will be equally heavy, or equally light; and therefore will they equally incline towards the Center, or towards the Circumference; since no one Part will thrust any other Part out of its Place, and so every one will remain in its proper Situation, and therefore be at rest with respect to one another: and since a Pressure is supposed equal on all sides, no Parts will be more, nor no Parts less pressed upon; and therefore, according to *Archimedes*, no Part will be thrust out of its place, and so every one will be at rest. Neither, moreover, will the Parts of an homogeneous Fluid equally pressed upon in the same Distances from the Center, be moved towards one Point more than towards another; because there is no Cause which can bring it about, that they may be moved one way more than another, and they cannot at the same time be moved contrary ways, and therefore will they be not moved

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moved at all: and especially since if all the Parts move one way, the whole Fluid must move the same way; because the Motion of all the Parts one way, is the same as the whole Fluid moving the same way; and therefore the Vessel being at rest, they can be moved no way at all.

§. 21. AND that this may yet more fully appear, let it be considered, that the external Surface, to wit of clear Water, included in a spherical Vessel, and so equally pressed on every side, cannot move towards the Sides of the containing Vessel, because it is contiguous to it, and pressed upon by it; so that one Part cannot get nearer to the Vessel than another: and the second Superficies, nor any Part of it, can get no nearer the first, because it is pressed upon on all hands by the first Superficies and the Sides of the Vessel. And the same Reason obtains in all the Superficies and concentrical and spherical Surfaces that can be imagined in the whole Sphere of Water; from whence it follows, that no one of those Superficies, nor any of their Parts, can get any nearer the Center of the Vessel: for if any Part gets nearer the Center, it must necessarily first thrust some spherical Superficies, that lies nearer the Center, towards the opposite Side, so that the Superficies of the opposite Side, or at least some of its Parts, will approach the Side of the containing Vessel, which is contrary to what was

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first proved. And therefore 'tis demonstrated, that all the Parts of an homogeneous Fluid, as a Fluid, are at rest; or that every such Fluid has not any intestine Motion.

§. 22. AND if a Fluid is not homogeneous, all the heaviest Parts will descend to the Center, towards which they gravitate, and the others that have equal Gravities will adjust themselves at equal Distances from their common Center, and there be at rest, by the preceding Demonstration, and by those Propositions cited from *Archimedes*: For his Doctrine demonstrates, that all Parts of Water do equilibrate (that we may keep to this, for Example; for the Law and universal Property of any Fluid, as such, is the same) or do continue in an Equilibrium, so that no Part is nearer the Center of the Earth, than another in the same Superficies; whereby every Superficies of Water is necessarily a Sphere, because from the same Superficies of a Sphere, all right Lines drawn to the Center are equal. And since the same is true of all the Superficies of Water, it is plain that no Particle of Water (Water being still supposed universally fluid) can approach any thing nearer to the Earth's Center, or go further from it; and therefore that the Parts of Water are at rest amongst themselves.

§. 23. FROM these Premises, I conclude that there is no intestine Motion of the Parts of Blood; and therefore no such thing as Fermentation,

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mentation, in the sense of *Willis* and others,
who confound it with intestine Motion.

CHAP. V.

Of the Animal OEconomy.

§. 1. **T**HE Parts of our Food being divided by Mastication, and moistened with Spittle, that it may be render'd softer, in order to undergo a further Commintion, is thrust down into the Stomach; wherein, by the assistance of the continual Motion arising from the musculous Tunicks of the Stomach, and of Respiration, by which the Diaphragm alternately presses the Stomach downwards, the Parts of the Food softened with Spittle, and other serous Liquors, from the Glands, is shook about, ground, and divided into yet smaller Parts, until it acquires such a Fineness as is requisite, together with the glandulous Fluids, and Liquors drank down, for the composing that which is called Chyle.

§. 2. TO this I add, that the Parts of the Food are not dissolved into essential Parts (as some call them) or Elements, whether chymical or any other, by the assistance of any Ferment in the Stomach: that is to say, by a Separation of some Parts of different kinds, combined together, and a Union of other Parts before in Separation, as it happens in all Fermenta-

tion of Wine; wherein tartarous Particles, before united with others, are separated; and Particles of Phlegm and Oil, before in Separation, are brought nearer together, and form a true Spirit. But by the Concoction that is perform'd in the Stomach, the Food is divided into integral Parts, not differing from what they were before, but in obtaining lesser Bulks; in the same manner altogether, as Coral is ground upon a Marble with Water, and reduced into an impalpable Powder, whose Parts are only small Pieces of Coral, and not any Principles into which Coral is resolved.

§. 3. FOR the Proof of this Matter, there is no need of any other Argument, than that in the Stomach and Intestines of the larger Fish, which devour and digest the lesser, the Chyle is nothing else but a Liquor, filled with the Fibres of the Flesh of those Fish devoured; as is easily to be discerned with a Microscope: or the small Parts of Fibres, no way differing from the greater, that is, indigested Pieces of Fish, unless in Magnitude. The Chyle, thus elaborated in the Stomach by its alternate Contraction, and the Force of the neighbouring Muscles, is thrown out into the Intestines; at its entrance into which it is diluted with the Bile and pancreatick Juice: which Liquors undergo no manner of Effervescence with the Chyle, or with one another, but are smoothly and quietly mixed therewith, and with each other,

other, as appears by many Experiments; but by their means the Chyle is rendered more fluid. Hence it is, that the Parts of the Food, in some measure dissolved by the Motion of the Stomach, but not sufficiently separated from each other, through want of a due Quantity of Fluid, every one as yet being in some measure in contact with one another; are at length, by obtaining a greater Space in a greater Quantity of Fluid, much easier removed farther off from one another, and the lesser disengaged from the greater Particles: and when these greater or less digested Parcels cannot, by reason of their Magnitude, be strained in any considerable Quantity, into the *Lacteals*, they are yet thrust further into the intestinal Tube, and therein putrify, since they are out of the verge of Circulation, which commences at the *Lacteals*. For all things, as the Flesh of dead Creatures, Herbs, &c. which can be digested or concocted, when out of the Animal, do putrify. Hence it follows, that Digestion is much more effectually and expeditiously performed in the Day-time, or when we are awake, than in the Night, or during Sleep; because while we wake, we breathe thicker, and the Diaphragm, and Muscles of the Abdomen, and even the whole Body is more exercised, and the Stomach is oftner compressed.

§. 4. IT also follows, that by gentle walking, or while we exercise our selves in any

moderate Motion, Digestion is much more effectually and more expeditiously performed, than while we sit in Idleness, and without Motion; and still much better than when we sit hard at Study, because by this the Mind is so diverted, that our Respiration then is rarer, even than in our Sleep, and the Muscles are thereby less contracted.

§. 5. A N D that we digest better in Winter than in the Summer, is also a Confirmation of our Opinion; because in the Winter, to drive away the Sense of Cold, we are oftner put upon Exercises, and greater Activity of Body, than in the Summer Season.

§. 6. B U T as for any Ferment of the Stomach, whether it be Spittle, or *Serum*, ouzing out from the Glands of the Stomach, it cannot contribute any thing to the Digestion of the Food, any further than by softening it, whereby it is capable of being further divided: Neither do any Liquors flow into the Stomach, in order to promote Digestion; but Digestion, that is, the Motion of Chewing, Swallowing, and of the Stomach, are the Cause why those Liquors are pressed out, and that they drain into the Stomach. For that those Liquors contribute nothing to Digestion, is manifest from hence, that if Herbs or Meat be mixed with them in any convenient Place, as warm as the Stomach, but without Motion, they will never be changed into Chyle: so that it is astonishing any should ascribe to the *Serum* of the

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the Blood, as it is excerned by the Glands, a Faculty of changing solid Meats into the Form of Chyle; when it is evident, that *Serum* is not a fit Menstruum for the Solution of Bread, Meat or Herbs.

§. 7. BUT this whole Affair will be much better, and more fully understood, from considering *Boyle's Machine* for Digestion, described by *Papine*; wherein, without the help of any Ferment, but by the assistance only of Heat, and the Pressure of rarefy'd Air confined, Bones and Flesh, with the addition of a small Portion of Water, are turned into a Gelly: where nothing is wanting to its being made real Chyle, but the rough Superficies of a Body to grind and often shake it about.

§. 8. THE Chyle thus made, is convey'd into the Blood by ways sufficiently known: And that the Nature of it may the better be discovered, we shall recite some Experiments made upon Blood drawn out of its Vessels. The Jugular Vein, and Carotide Artery therefore of the same Animal being open'd, and the Venal and Arterial Blood received into different Vessels, and mixed with different Substances, exhibited the following Phoenomena.

Some Experiments made on the Blood of Animals.

§. 9. THE Venal Blood, that had nothing mixed with it, in the space of almost an Hour

was perfectly coagulated, without any Serum, and the lower Part was black; the Arterial Blood coagulated in the same space of time, but more strongly than the Venal, and was not black at the bottom.

§. 10. THE Venal, which had Oil of Vi-
triol mixed with it, strongly coagulated, and
quickly put on a Verdigrease Colour, with
a Separation of Serum; the Arterial Blood
mixed with the same, appeared in like man-
ner.

§. 11. THE Venal mixed with Spirit of
Sal Armoniac did not coagulate, and preserv'd
the Colour of pure Blood, but was of a some-
what deeper red; the Arterial mixed in the
same manner, put on the same Appearances,
but with somewhat a deeper Hue.

§. 12. THE Venal mixed with Oil of
Tartar did not coagulate, only a Pellicle
came over the Top of it, and the Colour
grew rather more fiery: the Arterial the
same.

§. 13. THE Venal mixed with Spirit of
Wine strongly enough coagulated, but ran
into Grumes, with a large Separation of Se-
rum, and its Colour of a blackish red: the Ar-
terial the same.

§. 14. THE Venal mixed with an Extract
of Galls, ran into Grumes, gave a Separa-
tion of Serum, had its Superficies more spark-
ling, and its under Part of a dull red: the
Arterial the same.

§. 15.

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§. 15. THE Venal mix'd with Spirit of Nitre, ran into a soft Coagulum, not unlike Mud, and losing all its red Colour: The Arterial the same.

§. 16. THE Venal mix'd with common Spirit of Salt, diluted with Spring-Water, did not coagulate, but only chang'd its Colour; but mix'd with common Spirit of Salt alone, it coagulated, as with Spirit of Nitre: The Arterial the same, unless it was somewhat thinner, and more sparkling than the Venal, when mixed with common Spirit of Salt diluted with Water.

§. 17. THE Venal mixed with the Juice of Monks-hood, did not coagulate in the same manner as pure Blood, but about a fourth Part only, the rest being ferous, and the whole was black: The Arterial did not coagulate at all with the same Juice, but a Pellicle only came over it, and its Colour was the same with the Venal.

§. 18. THE Venal mix'd with Juice of Hemlock, did strongly coagulate, the Colour hardly differing from that of pure Blood, unless on the Superficies it was somewhat more livid, and approaching to a blue: The Arterial mix'd with the same Juice, in other things was like the Venal, but did not so strongly coagulate, and not so strongly as pure Blood.

§. 19. THE like happen'd to both Bloods, mix'd with the Juice of the deadly Nightshade.

§. 20. THE Venal mix'd with the Juice of Snakeweed, did less coagulate than pure Blood, but its Colour was more livid: The Arterial mix'd in the same manner, did coagulate yet less; but in other respects was like the Venal.

§. 21. THE Venal mix'd with the Juice of Elder-leaves, did coagulate as pure Blood, but its Colour was more livid: The Arterial mix'd in the same manner, did not coagulate at all.

§. 22. THE Venal mix'd with the Juice of black Hellebore, did not coagulate so much as pure Blood, and the lower part was less black than that of pure Blood: The Arterial appeared in the same manner.

§. 23. THE Venal mix'd with Juice of Lavender, did not coagulate, but turn'd somewhat blacker: And the Arterial was much blacker than pure Arterial Blood, insomuch that it was all chang'd black.

§. 24. THE Venal mix'd with the Juice of Sage, neither coagulated, nor chang'd Colour: But the Arterial seem'd more livid than pure Blood, yet did not coagulate.

§. 25. THE Venal mix'd with the Juice of Master-wort, was in the lower part somewhat coagulated, and a Pellicle came over the top; but after an Hour and an half the whole coagulated, but the Colour was somewhat more obscure than pure Venal Blood: But the Arterial, mix'd in the same manner,

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did

did not at all coagulate, and the Colour was much blacker.

§. 26. THE Venal mix'd with an Extract of the Leaves of Thea, coagulated a little, but turn'd blackish, altho the Extract was red: The Arterial did not coagulate at all, unless in the middle, where the Colour was yellowish; the rest consisted of a blackish Serum.

§. 27. THE Venal mix'd with the Juice of Wormwood, did not coagulate, but let fall a Sediment of a blackish red: The Arterial in the same manner, but without a Sediment.

§. 28. THE Venal mix'd with the Juice of Baum did not coagulate, but gave a Sediment very livid; the Colour of the rest was black: The Arterial put on the same Appearances.

§. 29. THE Venal mix'd with the Juice of Ladies-Mantle, precipitated blackish red Grumes; the rest, which was three times as much, remain'd liquid: But the Arterial did not at all coagulate.

§. 30. THE Venal mix'd with Juice of Bistort, moderately coagulated, being soft in the lower Parts; but the upper were quite liquid, and all of a Verdigrease Colour: The Arterial was the same.

§. 31. THE Venal mix'd with the Juice of Mugwort, did less coagulate, was of a livid and blueish Colour in the upper Part, and the lower Part was less black than that of pure Venal Blood; but after an Hour and half

half it was quite coagulated, and look'd shining, except a Pellicle at the top, which was of a livid and blueish Colour on the Superficies: The Arterial the same.

§. 32. THE Venal mix'd with the Juice of Viper-grass, did hardly at all coagulate, but remain'd almost quite liquid, and of the Colour of pure Venal Blood: The Arterial had the same Colour with pure Arterial Blood, and had hardly its half coagulated.

§. 33. THE Venal mix'd with the Juice of wild Succory, did not coagulate, but had a greenish Sediment; its upper Part was very black: The Arterial also did not coagulate, but it was somewhat thicker, and less black than the Venal, mix'd with the same Juice, and its Colour was yellowish.

§. 34. THE Venal mix'd with the Juice of Mint, did not altogether coagulate, its Colour remaining the same as natural Venal Blood: The Arterial had also the same Colour, but gently ran into Grumes.

§. 35. THE Venal mix'd with the Juice of Celandine the lesser, did less coagulate than pure Venal Blood, and had an obscurer Colour: The Arterial mix'd with the same, did more strongly coagulate, and look'd brighter.

§. 36. THE Venal mix'd with the Juice of Horse-Radish, coagulated in the same manner as pure Venal Blood, and kept the same Colour: The Arterial was the same in other respects, except a little more yellow on the Surface.

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§. 37. THE Venal mix'd with the Juice of Tanfy, did not coagulate, but was only rendred somewhat thicker; at the bottom a small Grume was found: The Arterial did more strongly coagulate with the same Juice.

§. 38. THE Venal mix'd with the lixivial Salt of Tamarisk, did hardly coagulate, but grew somewhat thicker, without changing Colour: The Arterial mix'd with the same Salt, did strongly coagulate, and contracted a Colour brighter than that of pure Arterial Blood.

§. 39. THE Venal mixed with the lixivial Salt of the Stalks and Shells of Beans, did not coagulate, but was render'd somewhat thicker, without change of Colour: The Arterial neither coagulated, nor became thicker, but put on a more dusky Colour.

§. 40. THE Venal mixed with the fixed Salt of Rocket, grew brighter without any Coagulation, than the pure Venal Blood: The Arterial was the same.

§. 41. THE Venal mixed with the fixed Salt of Mugwort, became of a very green Colour, without any Coagulation: But the Arterial became thicker, and of a blackish grey Colour.

§. 42. THE Venal mix'd with the fixed Salt of Peny-Royal, grew somewhat thicker, and of a greenish Colour: The Arterial the same, but more green.

§. 43. THE Venal mix'd with the fixed Salt of Rosemary did strongly coagulate, with a Colour between red and purple: The Arterial did less coagulate.

§. 44. THE Venal mix'd with the fixed Salt of Thyme, did strongly coagulate, and obtained an obscurer Colour, than when mixed with the Salt of Rosemary: The Arterial did not altogether coagulate, but became somewhat thicker, and of the same Colour with the Venal abovementioned.

§. 45. THE Venal mix'd with the fixed Salt of Shepherd's Pouch, did not coagulate, and was of a clearer Colour than pure Venal Blood: The Arterial was in other respects like the Venal, but somewhat of a yet brighter Colour.

§. 46. THE Venal mix'd with the Salt of Thea, did not coagulate altogether, but became somewhat thicker: The Arterial remain'd almost limpid, in other respects being like the Venal Blood.

§. 47. THE same happen'd upon a Mixture of the Salts of the lesser Celandine, of Ash, St. John's-Wort, Ladies-Mantle, Germander, and Baum.

§. 48. THE Venal mix'd with the fixed Salt of Melilot, did coagulate, with a blackish red Colour: The Arterial did not coagulate, but lost all its Redness.

Some

Some Experiments with the Serum of Human Blood.

§. 49. THIS Serum mixed with Spirit of Wine, did precipitate into whitish Grumes.

WITH Spirit of Sal Armoniack it did not change, nor with Oil of Tartar.

WITH Spirit of Vitriol it did strongly coagulate.

WITH Spirit of Nitre more strongly, and with a greyish Colour.

WITH common Spirit of Salt as strongly.

WITH Spirit of Honey it grew turbid, and turn'd black, without any Coagulation.

§. 50. A F T E R these Experiments made upon the Blood, by which we may learn what things are dispos'd to coagulate it, or fuse it, or preserve it in its natural Fluxility, we shall proceed to those Topicks usually expected, viz. how the Blood is produc'd, and in what Place; how it is enabled to give Nourishment and Vigour to the Parts of the Body.

§. 51. W E have already shewn, that Chylification is the *Comminution of the Parts of our Food* by the Motion of the Stomach, and the adjacent Parts; which also may be illustrated from the manner by which some Birds, that swallow Gravel and little rough Stones, grind their Food, and wear away those viscid Remains of Chyle from their Stomachs, which would

would otherwise hinder the Coats thereof from duly embracing their Meat. And in the same manner we pronounce Sanguification to be a *Comminution of Chyle*, by the Motion of the Heart and Arteries, compressing their Contents; and that more especially in the Lungs; by which it is that the Parts of the Chyle are reduc'd as small as the Parts of the Blood, and equally smooth, so that they may as easily roll over one another, and constitute that Fluid, which to our Senses appears in the Vessels homogeneous: whence we judge there is no necessity of a Ferment in the Heart, or any other Parts, for Sanguification.

§. 52. THE Parts of our Bodies are nourish'd with the Blood, for they were made out of it; and in the room of somewhat daily wasted, new Matter is supply'd from that Mass. But every Part is not nourish'd with integral Blood, nor with its Serum only; as it is evident, that the Bones are not made of the red Part of the Blood, nor alone of the ferous Parts, but from a sort of gritty and hard Matter, floating in a great number of small Particles in the Blood: so that these Parts, and all others, are nourish'd with the same Matter from which they were first formed.

§. 53. BUT here it is necessary to explain some Terms, which have been very common amongst Physicians, especially the Antients, and which it is therefore of consequence to under-

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understand. They have said a great deal concerning *Natural, Vital, and Animal* Spirits, which they imagined to preside over so many Faculties of the same Denominations: The *Natural Faculty* they called That by which those Actions are perform'd, that regard the Conservation of the Individual or the Species; and these are Generation and Nutrition, for Augmentation is only a greater Nutrition. The *Vital Faculty* That whereby the Pulse beats, whereby Heat is propagated thro the whole Body, and whereby Respiration is perform'd. And lastly, the *Animal Faculty*, they called That whereby we think, and direct our Bodies and its Members into Motion. The Moderns, as *Zypaus, Waldschmiedt*, and some others, cry out they cannot understand these Distinctions, nor admit of them; but we will so explain them, that they may be both understood and admitted.

§. 54. THE *Natural Faculty* therefore, is that Power arising from the Blood's Circulation, which is conspicuous in all the Secretions perform'd within the Body; that Secretion alone excepted, which is made at the Origin of the Nerves. The natural Spirits therefore is the venal Blood, or any sanguineous Fluid contain'd in the Veins, or any other Vessels, except the larger Arteries and Nerves; for the venal Blood itself, which is contain'd in the minutest Veins, gives Nourishment to the Parts of the Body, which is the Office

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assigned by the Antients to the natural Spirits.

§. 55. THE *Vital Faculty* is that muscular Force of the Heart, whereby the Blood is made to circulate thro the whole Body; and we have before defined Life itself to be that circulating Blood: whence the Vital Spirits is the arterial Blood, not yet got into the evanescent Arteries; for this produces the Pulse, and communicates Heat to the Parts: But in the evanescent Arteries the Pulse sinks, and the Heat declines. Now the Pulse and Diffusion of Heat is the Office assigned by the Antients to the *Vital Spirits*.

§. 56. LASTLY, the *Animal Faculty* is that Power, which, whilst the Blood circulates within the Brain, is exerted for the Separation of a Liquor to be deriv'd into the Nerves, which Liquor is called *Animal Spirits*: For this by its Motion produces in us Sense and Action, according to the Opinion both of Antients and Moderns. The Definitions of these Terms being premis'd, after I have suppos'd the Chyle mix'd with the Blood, and carried to the Heart, by ways commonly known, I shall proceed in explaining what next occurs, viz. the Business of Respiration in a human Body, and that in a few words.

§. 57. IT has been sufficiently demonstrated by Experiments, that the Air does ponderate, and that it is also fluid; and therefore, according to the Nature of a Fluid, will it rush
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into any Place that is exhausted, or where it finds less Resistance and Pressure than from the rest of the super-incumbent Air.

§. 58. IMMEDIATELY upon the Birth therefore, the Air is forced into the *Larynx*, whereby the Gravity of the external Air is sustained by the internal, or there will be an equal Ballance between the external and internal Air; and then it is, that the Muscles dilating the Breast, first come into Action. Before the Air breaks into the Cavity of the Breast, the outer Superficies of the Thorax will be press'd upon by a Weight of Air equal to the Weight of a Column of Mercury seven or eight and twenty Inches high, and whose Base is equal to the external Superficies of the Thorax: so that the Muscles dilating the Breast cannot be inflated, and consequently be contracted by reason of that Pressure; and therefore neither can the Thorax itself be dilated. But upon the Immission of Air enough to make an Equilibrium with the external Air, the least Impetus imaginable, or the Power of the animal Spirits, is sufficient to inflate the Muscles destin'd for Respiration, and so to contract them. Now, if we contract the elevating and dilating costal Muscles, the Capacity of the Thorax will necessarily be rendred larger: And since that internal Capacity, which accrues to the Thorax by such Dilatation, is empty, or fill'd with a Fluid of no Resistance, the Air will further

rush thereinto ; but this it cannot do, but by the *Aspera Arteria*, thro whose Ramifications it will be convey'd to all the Lobes of the Lungs, and Vesicles forming those Lobes, since by the natural Weight of the Parts, and the Gravity of the superincumbent Air, it is press'd even to the minutest Openings of those Vesicles. And this Action is call'd *Inspiration*.

§. 59. BUT since the Efflux of animal Spirits from the Nerves into the Muscles is alternate, upon the ceasing of such Influx, the Inflation will also cease, and the Contraction of the intercostal Muscles ; and therefore the Ribs will fall down into that Situation, by their own Weight, which they possess'd before Inspiration, and the Capacity of the Thorax will become less ; the Lungs also falling together, and being compress'd by the Force of the sinking Ribs. From whence it comes about, that the Air which was contain'd in the larger Ducts of the Trachea is forc'd out by the Mouth ; and the Passage of that Air got into the interior Part of the Lungs being precluded, and it therefore being further driven into the minutest Ramifications of the Lungs, presses the capillary Sprigs of the Pulmonary Artery with its Weight and Spring, and thence thrusts the Blood into the Branchings of the Pulmonary Vein, leading to the left Ventricle of the Heart.

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§. 60. HENCE it is manifest, that the Business of the Air receiv'd into the Lungs, or of Respiration, is for that Comminution of the Blood which is required in order to facilitate its Passage thro the Pulmonary Vessels to the Heart, after the same manner as we explain'd the Business of the Stomach, or of Digestion, to be for dividing the Food as far as was requisite for its entring into, and passing thro the lacteal Vessels, in order for its Conveyance to the common Receptacle. For what is commonly asserted, that the Air, or some Particles of Air, either sulphureous or nitrous, are mix'd with the Blood by means of the Lungs in Respiration, does not seem to me at all credible; because the pulmonary and arterial Branches are almost continued, as shall afterwards be prov'd, when we shall demonstrate the Veins to be a continuation of the Arteries: and therefore can there be no Apertures or Openings of the Vessels, thro which the Air can freely pass into the Lungs.

§. 61. THE Blood is carried from the Pulmonary Vein into the left Auricle of the Heart, and from thence into the left Ventricle; whence it being contracted by the assistance of its Nerves, the Blood is thrown into the Aorta and its Branches, wherein are Vessels that separate some Parts from it, and the rest of the Blood returns by the Veins to the right Ventricle of the Heart.

§. 62. THAT Propulsion of Blood from the left Ventricle of the Heart, occasions a Dilatation of the Artery and its principal Branches, which thrusts against the Fingers laid thereupon, and this is call'd the Pulse. This is perceiv'd at the same time in all the larger Arteries, and those differently distributed from the Heart; for the Arteries are always full of Blood, and therefore the *Impetus* of Blood impress'd nearest to the Heart, is at the same time communicated to the Blood thro' the whole Length of the Artery: wherefore likewise at that time the Heart is contracted, or strikes against the Breast, the Arteries beat, by reason the Blood that is thrown into them is in a Quantity greater than can be contain'd in the natural Capacity of an Artery; but the propelling Force ceasing a little, the Arteries by their elastick Force contract, and so thrusting the Blood forwards, are reduc'd again to their former Capacities. But now it is commonly, that not only the violent Dilatation of the Artery, or its *Diastrale*, but also its Contraction, or *Systole*, passes for the Pulse.

§. 63. BUT because there are many Differences of Pulses to be observ'd, which accompany Diseases and their Changes; therefore we shall briefly explain those Differences.

§. 64. A HIGH Pulse is either vehement or strong; but if the Dilatation of the Artery does not rise to its usual Height, it is call'd a low

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low or weak Pulse ; but if between its Dilatations there passes more time than is wont, it is call'd a slow Pulse ; but if less time, it is call'd a quick Pulse. Again, if the Coats of an Artery feel harder than usual from any Cause whatsoever, it is call'd a hard Pulse; but if by any contrary Cause they are softer, then it is called a soft Pulse ; so that there will be of use to us three different kinds of Pulses, to wit, a high and a low Pulse, a quick and a slow Pulse, and a hard and a soft Pulse ; and of the latter Difference we ought to be very careful in examining.

§. 65. IF there are such as a swift or a heavy Pulse, yet they cannot be by us distinguish'd ; for I would mention only those which are of moment to Physicians, and so distinguishable by the Touch : now a Pulse that is called swift, is, when an Artery continues a less time at its Height of Dilatation than usual, and heavy when a greater time. But the Difference of time in which an Artery continues under such a State of Dilatation, is imperceptible to the Touch of the Finger. For, there are 3600 Pulses in a Man of moderate Health within the Compass of an Hour, since every Pulse answers to a Second of a Minute, and some part of that Second must be allotted for the space of time the sides of an Artery take before they come to their utmost Dilatation, and another Part for that space in which they fall back to their

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natural Capacities ; and all this must pass within the space of a Second of a Minute, or the 3600th Part of an Hour. From whence it is plain, that such a Part of the Second of Time as is allotted for the Duration of the utmost Dilatation, must be so small, that we cannot by the Touch of our Fingers distinguish any to be lesser. Lastly, an unequal and intermitting Pulse are only Species of a quick and a slow Pulse : For if the Quickness or Slowness is always uniform to itself, it is an equal Pulse ; but if it be not uniform to itself, then it is unequal and intermitting.

§. 66. WE now pass to the Consideration of the Blood, not any longer as contain'd in the Arteries only, but distributed into those Viscera and Glands, wherein divers Liquors are obtained from it. There is no one unacquainted with what is separated in the Liver, Pancreas, subcutaneous Glands, and innumerable others discover'd by the Industry of Anatomists, and by them described. Wherefore we shall desist from a reciting of such, confining our selves to the Explanation of some Properties useful to be known by Physicians, concerning those Secretions made in the Brain, Kidneys, and Testicles.

§. 67. THE Blood flowing thro the carotide Arteries and others into the Brain, and the Glands, hanging or twisted upon the Extremities of the evanescent Arteries, at length enters into their Ducts ; but from those

those Glands go out, besides the Veins that return Part of the Blood, Threds which compose the Nerves, and their Medullary Combinations; which, because they are hollow, take off some Portion of the Arterial Fluid, and send it to all Parts of the Body: as is manifest by the Loss of all Sense and Power of Motion in those Parts upon the Nerves, which are distributed to them, being either cut or compressed.

§. 68. **T H A T** Portion of Arterial Fluid which passes into the Origin of the Nerves, consists of a twofold Nature: some part of it, for instance, is easy of Motion, and is dignify'd with the Appellation of Spirit; and the other more viscid, and hardening with Heat, by the escape of the more subtile and volatile Parts, which gave it a greater Fluidity. These are manifest by the following Experiment.

§ 69. **I F** the Sternum of a live Dog be carefully separated from the interior Part of the Diaphragm, so that the phrenetick Nerves be not damaged, and either of these be compress'd with the Fingers a little above its Insertion into the Diaphragm, then in a little time the Diaphragm will cease to move; and if the intercepted Part of that Nerve, between the Diaphragm and the Fingers, be compressed by another Person thro that whole space to the Insertion, so that such Juice as may therein remain, be squeez'd into the Diaphragm, then the Diaphragm will again recover its Motion,
and

and continue in it some time by alternate Contractions. After this, for some space of time, if the Fingers be removed from their Contact, and then made use of again to compress the Nerve, the Diaphragm will again cease its Motion, until the intercepted Part below by another Hand be again stroaked towards the Diaphragm; for then again it will renew its Motion: and all this will happen for many Repetitions of the like kind.

§. 70. FROM which we may conclude, that the Motion of the nervous Fluid is not swift; since the time in which the loosen'd Nerve, freed from its Compression, convey'd its Liquor to the Diaphragm, was not the least, but distinguishable: for not immediately upon the removal of the Compression does the Diaphragm again move, but a successive Motion of the Hand is needful to draw down the Liquor from the intercepted Part of the Nerve into the subjacent Muscle: And this not only proves this Liquor to be not very quick of Motion, but also that some Part of it is adhesive and viscous. Hence it follows, that the animal Spirits do not flow in a continual Stream, but interrupted and in alternate Waves; or that the Apertures of the Nerves are alternately open'd and shut: which appears from hence, that the Diaphragm is alternately moved, not to say any thing of the Heart. For because the Motion of the Diaphragm necessarily answers to the Efflux of animal Spirits,
since

since it is produced by them, it is necessary that the Efflux of that Fluid should not be continual, but alternate. However the Influences of the animal Fluid seem to be suddenly produced, because the Nerves in healthful Persons are replete with that Fluid; so that the least Impetus may be communicated thro the whole Length of a Nerve in a moment of time.

S. 71. BUT I would have it diligently observed, that Animal Motion is effected by an Efflux of Spirits into the Muscles, or by their direct and longitudinal Motion; but Sensation is performed by a Reflux of those animal Spirits towards the Brain, the Origin of the Nerves. But since there is a Reflux, as there must be, in every Sensation, (that is, the Object striking and compressing the Extremity of a Nerve, either by itself, or by some Particles flowing from it; whence it is that the Part next thereunto, is dilated by the resluent Fluid, the next and superiour Part being in the mean time contracted, and so by alternate Contractions and Dilatations those Waves are excited in the Nerves, wherein the mechanical Foundation of Sensation consisteth) thro some Nerves arising from a greater Trunk, along the rest of the Branches of which Trunk there is not made a Reflux at the same time with equal Force; it is necessary that a greater Quantity of animal Fluid than usual, should be derived into the other Branches:

Branches : for part of the Fluid passing in that Trunk, is distributed thro others, in which there is no Reflux ; because it could not with the same Facility be drove into a Branch by which the Fluid returned, by reason of a greater Resistance therein. But after a very short time there will flow again by the Branch thro which the Reflux was made, a greater Quantity of Fluid than before ; for since by such Reflux that Branch is shook more than ordinarily, the Trunk also will be more than ordinarily shook ; and thereby the Fluid will flow from the Trunk in a greater Quantity, into all its Branches.

§. 72. FROM the Brain we descend to the Urinal, out of which the Water being poured, and in an open earthen Vessel set upon a moderate Fire to heat and boil ; while it boils, the Urine will sensibly change of a darker Colour, and a thicker Consistence : so that in the space of three Hours, if twelve Pound of Urine be at first taken, the greatest part of it will evaporate, and in the Bottom be left a thick Salt, and muddy Settlement. If to this Sediment be added Spring-Water at different times, until the Vessel be as full as before Evaporation, there will be recovered a Urine that will exhibit all the Appearances of that which is natural ; for this artificial Urine will afford in Distillation all that the Chymists are wont to obtain from a natural Urine.

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§. 73. HENCE it follows, that Urine is compounded of Water, common Salt, and Earth, since both natural and artificial Urine, when they begin to putrify, let-fall a dusty and insipid Sediment, which is what is called Earth. Hence also it appears, that the *Hypostasis* or *Sediment* in Urine, is that Part which is most loaded with Salt and Earth, which for that reason falls to the Bottom; but the Parts of Salt and Earth which are not so heavy, combine into Bodies called *Eneoremata* or Clouds, which float almost in the middle; and in the upper Parts, Films float about, that are composed of the most light of the solid Parts of the Urine.

§. 74. WHEN the Urine is first discharged, it generally appears of a Citron Yellow; which is occasioned by some Portion of Salt and Tartar mixed with the aqueous Fluid: so that if none or very little of Salt and Tartar happen to be mixed therewith, it will exhibit no other Colour than what is annexed to clear Water. But by how much the more of Salt and Tartar is mixed with the Particles of Water, or which is the same thing, by how much the less Proportion there is of Water, with respect to other Urines, by so much it will be the more obscure, and of a more sated Colour; as appears from the Evaporation of Urine, which becomes by so much the more obscure, by how much the more Water is evaporated. But, *ceteris paribus*, the Urine will be by so much

much the more transparent, or of a pale Colour, by how much the more Water it has with its Salt, or Salt with a little Water, and of both with respect but to little or no Earth; because Earth chiefly gives it a darkish Colour, as it is an opaque Body, but Water is translucent, and Salt, as a Chrystal, transmits the Light through. Whence it follows, that where there is none, or but a small Quantity of Earth, with a due Proportion of Water and Salt, the Urine, which is that of sound People, will not be altogether limpid, but a little fated, so as to incline to a yellow. For a white Urine (there being nothing in it viscid) proceeds from a great Quantity of Salts drawn together, and floating in too small a Quantity of Water.

§. 75. LASTLY, it may be observed, that immediately upon the Emission of the Urine, neither the Films, Clouds, nor Sediment do appear; but they become conspicuous, after it has stood some time at rest. The reason of this will be manifest from the following Considerations: These Contents which are composed of Salt and Earth, have moving Forces of different Tendencies; for they are of different Bulks and Gravities, and consequently of different Quantities of Motion, since the Quantity of Motion is estimated by a Rectangle under the Bulk and Velocity: so that were they of equal Bulk, yet having different Velocities, the Quantity of their Motion and *Impetus* would be

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be different. But whilst they are moved in the Serum with the Blood, before Separation in the Reins, they are prevented from sorting themselves into their proper Places according to their respective Motions, by the more forcible Motion of the circulating Blood. Nay, even after they are excluded the Body with the Urine, the Impressions they received in company with the Blood, from the Arteries and Heart, whereby they were confused and jumbled together, still continue; insomuch that it is some time before they separate into their distinct Places, suitable to their proper Gravities, that is, before they can become visible.

§. 76. WHENCE it follows, in order to know these Contents better, their Nature, and what remaining Inclinations they have left, that the Vessel in which the Urine is contained should continue at rest, and as free from too much Heat, (that I call so, which exceeds the beginning of the Summer Season) and too much Cold, (which is what exceeds the Cold of a Summer Night :) because otherwise Heat will keep up the Motion of the Salt and Water, so as to continue the Urine's Transparency; and Cold, by suddenly constringing all the Parts of the Urine, before they can extricate themselves from one another, will so entangle them together, as to make the Urine appear turbid throughout.

§. 77. WE shall now proceed to explain that Office of the Testicles, which belong to both Sexes. None are ignorant that in them is contained a twofold Seed; that is, in the Women Eggs, and in the Men a certain Liquor, without which those Eggs could not be impregnated. And since in other respects this Affair is sufficiently explained by *Drelin-court*, and other Anatomists, it remains only to be examined by what means it is that the Male Seed impregnates the Female Egg. The chief of what has been advanced upon this Head by very learned Men, and with the best colour of Truth, is, That the most spirituous and saline Parts of the virile Semen, generally received into the Womb, and sometimes into the Tubes, and those Parts where the Egg is lodged, do penetrate thro the Pores in the Coat of the female Egg, and therein agitate the Liquor so as to turn it into a *Colliquamentum*; the Particles of virile Seed, from a first Mover, or some plastick Power, shaping it into different Parts, according to its various Degrees of Motions, Elasticity, and mutual Congruity. But although these Reasonings may in an Affair of this Difficulty give satisfaction to some People, yet since they are opposite to the most known Truths, they ought not to influence our Assent; for to say nothing of its being impossible for any Particles of what Figure or Magnitude soever, by breaking into a Space full of a Fluid, and

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encompassed with a Coat capable of Distension, and there to form any other Body, besides a spherical one, within that Coat, whose outer Superficies shall be thicker. If the whole Fluid be not moved, the more gross Parts will retire to the Center, the finer being drove towards the Sides; so that a Body of any Resemblance to that of a Man can never by such means be form'd. To pass over these things I say in Silence, notwithstanding they are most certainly true, I desire it to be considered, that in all the Hypotheses which have been contrived to explain the first Formation of the *Fetus* in the Egg, this has always been assumed, that the spirituous Parts of the virile Seed do flow into some particular Place, where by Rarefaction they constitute the Heart, and which by their Motion they dilate, so that they afterwards break out from it, and return to it again by the Repercussion of the Membranes inclosing the Egg. But this is false and impossible, for the Heart is not dilated by the Blood's first rushing into it, but it ought first to be contracted before the spirituous Part of the Seed can be drove into its Capacity: But a Contraction of the Heart cannot be without an Influx of animal Spirits, nor can that Influx be made, unless the Heart be formed, whereby the Blood may be impelled to the Brain.

§. 78. FROM whence it appears, that at the same time are made both the Heart, and

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the Brain, and Arteries, and Nerves; but all these cannot be formed together by any Particles of virile *Semen*, in what manner soever moved, or disposed: whence it follows, that the immitted Parts of the Seed had therein constituted a Heart and Brain, before their Immission, so that there is a necessity for the Existence of an animal Body, such as it is seen to exist out of the Womb, though vastly less; but not in the Egg. And hence we come to the Knowledge of Animalcules in the Male Seed, without the help of a Microscope, which bestow Fecundity to the Female Egg.

§. 79. LET it be therefore supposed, that in every Drop of *Semen* there are innumerable Animalcules of both Sexes; some of which have Eggs in their *Testes*, waiting for the wished for Hour of Impregnation, and others a Liquor full of Animalcules to fecundate the Eggs of the former; Animalcules, I say, of both Sexes: so that from hence it may easily be understood, how in the first Parent all his Posterity were in Existence; and hence also many common Questions may easily be solved. One useful Hint hereupon I shall leave with you: If the Seed of a Person clapt be carefully examined with a Microscope, and if the Distemper is not yet conquer'd, the Animalcules will be found without Motion, and really dead; but if they move about freely every way, then it may be concluded the Distemper is conquer'd, although

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though there does not yet appear any other Symptoms of a Cure.

§. 80. BUT, indeed, although the Enquiry concerning the Formation of the Foetus in the Womb may seem to belong to the Physician, yet that concerning the Generation of Animalcules in the virile Seed does properly come into the Province of Divines; and in that Disquisition I wish them a happy Progress, but dare not hope for much Success.

§. 81. OUR next Task is to explain the Manner by which the Foetus is nourished in the Womb; and because this Affair may be better made appear by Example than by a general and dry Discourse, I shall briefly explain to you the manner by which the Bones seem to be nourished and encrease, as it appears most plain from the newest Discoveries of Anatomists.

§. 82. THE concentrick Superficies of the Bones are nothing else than several Membranes laid over one another, whose Pores are filled with hard Particles, derived from an indurating Juice; this Juice being carried along by the Arteries (the thinner Part returning by the Veins) sweats thro the Pores of those Membranes, whose Foldings over one another constitute the Bones. And because that Force by which these Particles are separated from the Blood always exists, but is not of the same Efficacy at all times, therefore it does not always cease as soon

as those hard and concrescible Particles arrive at those Pores ; but it is frequently so great as to drive those Parts further than the Membrane they first arrive at, and force them in between any two of those Membranes : since, *ceteris paribus*, the Resistance from the Interval of two Membranes is less than from that of their Superficies ; wherefore any Matter flows with more ease on all sides over their Superficies, than it can penetrate them. There are four kinds of Clavicles described, whereby the squamous Superficies of the Bones are connected ; of which the First are like Cylinders, which perforate two or more Membranes at right Angles, but the Second penetrate them at oblique ones ; the Third sort represent a Cylinder, having at one Extremity a Sphere of a larger Diameter ; and again, the last sort are not streight, but curved. These Clavicles are supposed by some to fasten the Plates of the Bones together, and that they are Parts of the bony Membranes, cover'd over both inside and outside with an adhesive Matter : but they are mistaken ; for since an equal Quantity of a concrescible Juice does not always sweat out of the Arteries, nor does that which sweats out always consist of equally adhesive Parts, it is necessary that if only a greater Quantity, and that more compact, sweats out, that will not so readily flow along the Interstices of the Membranes, or laterally, but will pass in a streight Line towards

wards the next Plate; because the Cohesion of its Parts is greater than the Cohesion of the Parts of the Membrane, and which therefore such Matter will break through; it consisting of solid Particles, and those flowing out immediately after one another. This Matter having penetrated the second Plate, whether perpendicularly or obliquely, if its *Impetus* there ceases, it becomes a Clavicle of the first and second Kind; but if its *Impetus* still continues, it will be pressed upon by following Matter, yet not with that Moment as is requisite for its Penetration thro the third Membrane, or to dilate its Pores, and conquer the Cohesion of its Fibres, so that it will touch it only and be repelled back. And if it strikes against it at right Angles, its Head, that is, its Point, must become spherical: For as the Clavicle declines not on one side more than another of the Membrane, (that is, it declines on all sides alike) it will be equally reflected on all Parts, and therefore must it become spherical where it made its *Impetus*. But if a Clavicle thrusts obliquely, it will be reflected towards the Parts of the obtuse Angle, in which, for instance, it made no pressure; and by which of consequence it is the least resisted, or acted against the reflecting Membrane: and this kind of Clavicle must be a Curve. From whence there is no necessity of believing those Clavicles to be made on purpose to tye the Bones together, but that they

they are only the necessary Effects of an unequal Exsudation of a bony Matter of unequal Consistence. But because the Membranes are on all sides distractile, therefore they may be dilated every way by the Particles of the bony Matter thrusting into their Vacuities, and extending them both in Length and Breadth. And since the original Membranes were endued with a certain divisible Thickness, and had Pores placed in that Thickness, upon a Repletion of those Pores, they would not only be encreased in Thickness, but also of one would be made two Membranes, whereby the bony Matter will insinuate between them; and upon that account also the Bone will become thicker.

§. 83. BUT from hence it is manifest, that the outer Membranes are more stretch'd in Breadth than the interior: for there is nothing to hinder the Dilatation of the exterior, which also cannot be a Reason for hindring the Dilatation of the interior; but the external hinders the Dilatation of the internal; and therefore since the internal has more Obstructions to its Dilatation than the external, it will be less distended or dilated. Because therefore the external has the least Resistance, and is most dilated, its Pores will be most crouded with the bony Matter, and that will therefore be the most hard, and therefore likewise will it most resist the Perforation of the direct Clavicles: from whence it is no wonder that there are no
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Heads of the Clavicles to be seen sticking out from the external Superficies of a Bone. And lastly, since the bony Matter finds less Resistance in its Motion lengthways, than it does sideways, because towards the Extremities of a Bone there is less Superficies than towards the Sides, and therefore they must increase more in length than in breadth; yet not only from a less Resistance, but also by reason of a greater longitudinal Pressure this comes about: for if the Thickness of an original Bone is greater, the Quantity of gritty Juice, according to the longitudinal Direction, will be greater, and therefore with a greater Force will it be extended in length. Wherefore in those Bones, as the Skull for instance, which stretch themselves into a curved Longitude, as in their Extremities they are equally hard, it is necessary that some Parts should be equally repell'd where they meet, from whence come those Parts protuberant in the Sutures of the Skull.

C H A P. VI.

Of a Disease.

OUR Method now requires, that after we have described Health, and some of those Properties arising therefrom, where enjoy'd,

joy'd, we proceed to explain the Nature of a Disease. Health we have shewn to be that Disposition by which Life is rendred indefinitely long, and Health so described is *absolute* Health: But because no Man whatsoever enjoys *absolute* Health, therefore such a Definition is of no use to a practical Physician. For the *best* of our Health is only *relative*, and that is best which approaches nearest to *absolute*. Wherefore since we have defin'd Life to be the Circulation of the Blood, as it is circumstanc'd in most Persons who live longest; therefore Disease is an unusual Circulation of Blood, or the circular Motion of the Blood augmented or diminish'd, either throughout the whole Body, or in some Part of the Body.

§. 2. D I S E A S E is variously divided, and to no manner of purpose, by Physicians, as it is manifest in *Sennertus*, *Zypæus*, and *Waldschmeidt*, who were Copyers only of *Sennertus*. The Division of Diseases into those of similar Parts, organical Parts, and a Solution of Unity, is very faulty; for to much better Advantage, and more for Information, they might have been divided first of all into *simple* and *compounded*. For a simple Disease is that which by the Writers of Institutions is called a *Symptom*; and a Complication of *Symptoms* is that which by them is term'd a Disease, but by us a complicated Disease: and by a due Consideration of this short Hint, that great Confusion in the Institutions of Physick, whereby
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cannot be rightly distinguish'd a Disease and a Symptom, may be remov'd. To no purpose likewise will be the Distinction of a Sign of a Disease from the Sign of a Symptom, which Physicians have taken so much pains about: To no purpose are those Causes of Diseases made distinct from the Causes of Symptoms; and to no purpose likewise are those Indications, which are taken from the most urgent Symptoms, as if they were distinct from other Indications. But because Use will have it, that the Terms Disease and Symptom be retain'd, a *simple* Disease shall by us be called a Symptom, and a *compound* Symptom shall be called a Disease. But a Division of all Diseases, that is, of their Kinds, *Wedelius* has admirably exhibited in his Tables, altho in Fevers he has been mistaken.

§. 3. IT remains now, that we enquire what both the Antients and Moderns have laid down concerning the Causes of Diseases. They have all agreed in this one Opinion, tho in different ways of expressing it, That the Causes of Diseases are either external or internal. The external, according to them, are of two sorts, *viz.* such as injure us either by Necessity, or by Accident: and the former of these are called the *six Non-naturals*, as Air, Meat and Drink, Sleep and Waking, Motion and Rest, things excreted and retain'd, and the Passions of the Mind; but as the latter sort are uncertain in number, they cannot be determined by Physicians. Nor is the Enumeration of the first sort very accurate; for some of the *Non-naturals* may be avoid-

avoided as much as a Fall or a Blow, which are the Faults of our Motions, or of some others, occasion'd by accident. More intelligibly might all those things, which are the Causes of Diseases, be divided into the Actions of other Bodies upon ours, or of our own upon themselves.

§. 4. THE Actions of other Bodies upon ours are proportional to their Forces, which Forces ought to be delivered by the Philosophers: nor is it the Province of Physicians to determine them, but to assume them for their Use, as being sufficiently known.

§. 5. THE Actions of our own Bodies, which are the Cause of Diseases, either depend upon the Direction of our Will, or are involuntary. Of the first kind are Motion and Rest, things excreted and retain'd, and the Passions of the Mind; of the latter sort are Respiration and Perspiration, Drinking, Eating, Sleep, and Watching. For the Reason why I reduce Excretion and Retention under the former Head, and Perspiration under the latter, is, because by Excretion I here understand not that natural and involuntary Separation, for instance, of the thicker Parts of Food parting from the rest; but a voluntary Expulsion, when separated by Stool: So may the Spittle, if we have a mind to it, be swallow'd; and so may Respiration and Perspiration be obstructed, if we please to have it so, and throw ourselves into cold Water, either in part or all over.

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And in that Case I refer the Defect of Respiration to the Fault of Excretion or Retention in the first Class: but when Perspiration and Respiration are both injur'd by the Air, changed either in its Gravity or Elasticity, which is done without our Consent; then Perspiration and Respiration also are of that sort which I refer to the latter Class.

§. 6. BUT all these Affections are then to be considered as the Cause of Distempers, when they may encrease or diminish the Blood's Circulation. For first of all, too great Motion of the Body increases the Blood's Circulation, by causing such Concussions as shake out the animal Spirits too much or too often into the Heart and other Muscles. A too quick Excretion, for instance, of the Faces by Stool, is, when by any Cause whatsoever, before a due Separation is made of the useful Parts of the Chyle from the excrementitious, which is done but slowly, there is ejected the useful with the useless; whence there is a less Separation made of the Parts of Blood, and a Refrigeration of the Body, by reason of a debilitated Circulation, or a Pulse render'd weak or slow. The Affections of the Mind, as Fear or Anger, are accompanied with a slow or a quick Pulse, and so they vitiate or alter the Circulation of the Blood. Respiration and Perspiration, in too rarefy'd a Constitution of Air, hurt the Blood's Circulation, without
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our Possibility of preventing it ; for it is very well known, that Animals included in a *Vacuum* immediately respire with difficulty, because what Air remains, has so little Weight, and is so extremely thin, that when drawn into the Lungs, it has not sufficient Force to help the Blood thro them, whence the Circulation first grows slow, and in a little time quite stops ; and the Circulation growing slower, Perspiration must of course decrease, and that Decreasing leaves a Load upon the Vessels, and renders the Blood viscid. Eating and Drinking to Excess also renders the Blood viscid ; or if we eat too often, or drink too often, so as not to give due time for the performance of Digestion between, the Chyle and Blood must of course be rendred more viscid ; or if we eat and drink what rarefies too much, then the Blood will be too much encreas'd in its Motion. The Cause of Sleep is a greater Proportion of Particles that are watry and viscid, than what is requisite for exciting proper Undulations in the nervous Fluid ; from whence there is also a lesser Proportion of the more subtile liquid Part, which in every Sensation is diffus'd from the Center to the Circumference of every Wave. Whence in Sleep the external Senses are weak, the nervous Fluid moves slowly, the Heart seldomer contracts, and the Circulation of the Blood goes on with less Briskness. Watching produces all the contrary Effects. And this is what we

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think sufficient to lay down concerning the six *Non-naturals*.

§. 7. THE Writers of Institutions say a great deal concerning the internal Causes of Diseases, which are indeed the Diseases themselves. Those Causes they generally divide into a *Plethora* and a *Cacochymia*: But a *Plethora* is a Disease; for a *Plethora* with respect to the Vessels (from which a *Plethora* with respect to the Strength is not different) too much distends the Vessels; and therefore it is a Disease, according to themselves, by an Augmentation of Bulk.

§. 8. AND thus a *Cacochymia* is also a Disease; for it may be remembered what was advanced concerning Temperaments, that they were different kinds of a beginning *Cacochymia*; and they are in truth original Diseases. But altho we describ'd only three sorts of Temperaments, yet there are as many as there are Secretions of different Fluids in the whole Body; but thro defect of due Observation, such have not hitherto any distinct Names assign'd them.

§. 9. BUT that Temperaments are really Diseases, shall presently be demonstrated: for it is now convenient that we lay down the Signs of Temperaments, and others to be observ'd from the Urine and Pulse, by which the Nature and Force of the Blood's Circulation may be known. For what has been advanced

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concerning other Signs, are by all described in the same manner.

§. 10. **T H E** Signs of a bilious Temperament are a large Pulse, a lean Body, Promptness to Anger, and a small Appetite. For this Temperament argues that there is in the Blood a great Quantity of Humours composing the Bile; or at least that the Quantity that is there is easily separated from the Blood; that is, the Blood is of a loose Texture, and whether it contains a greater Quantity of Bile, compos'd of inflammable and rarefying Particles, or whether only the Bile is more easily separable from it, it shews that the Cohesion of the Parts of Blood is but very small. Wherefore the Pulse will be large; both by reason of too great a Rarefaction of the Blood, and by its distending the Arteries beyond its due Bounds.

§. 11. **A G A I N**, Bilious Constitutions are lean for many Reasons: but since they have but a small Appetite, that alone will be sufficient, because a necessary Cause. And they have but small Appetites, because they separate a greater Quantity of Bile, which flowing into the Stomach, destroys the Sense of Hunger. For the natural Sense of Hunger is never excited when any thing is in the Stomach in great plenty; for at such times the Appetite of Hunger would not so much be excited, as of Vomiting, or a Nausea.

§. 12. BILIOUS Constitutions are passionate, because since their Blood is so much rarefy'd, it will of course be of a lighter Texture; and consequently the easier mov'd about, or more apt to excite the Species of Anger.

§. 13. ALL these in conjunction therefore constitute and denote a bilious Temperament, which is called hot and dry, because the Blood's Rarefaction gives liberty for the Heat to be more perceptible, that is, to have more room for its Motion externally; and by the very same Motion it dissipates the aqueous Parts.

§. 14. THE Signs of a melancholy Temperament are a slow Pulse, a pale Complexion, heavy to Motion, and a Gloominess of Mind. For since melancholy Constitutions have either a greater Portion than natural of aqueous and saline Parts, which make up the greatest Part of Urine and Sweat; and the saline Parts of that sort, which constitutes the *Sal marinum*, whereby the Blood is not able to supply a sufficient Proportion of Spirits, or of the moveable Parts of a nervous Liquid; whence, from a Deficiency of Spirits the Pulse will be slow: or melancholy Persons will more easily discern greater Quantities of aqueous and saline Particles. And this can happen from no other Cause but that their Blood is not so strongly moved as to prevent by its *Impetus* the Salts falling off from it by their proper Weight thro the secretory Passages. From whence also on another account this Constitution will be

be attended with a Diminution of the Blood's Velocity; because from its slow Motion it comes about, that a lesser Quantity than usual arrives at the Brain in any given time: whence the animal Spirits are not there so soon repaired, nor are they so soon deriv'd into the Muscles and Heart: whence the Pulse cannot but be slow. And melancholy People are pale, by means of a lesser *Impetus* of Blood; and heavy to Motion, because of a slow Influx of animal Spirits into the Muscles: and they are given over to Care and Sadness, because those Passions of the Mind are a Species of Fear, with which a slow Motion of Blood is always inseparable.

§. 15. WHEREFORE all these, in conjunction, are Signs of a melancholy Temperament; and it is a Temperament cold and dry: cold, by reason of a slow Motion of the Blood; and dry, thro a great Waste of aqueous Parts.

§. 16. OF a pituitous Temperament, the Signs are a low Pulse, a Dulness of Apprehension, and a Listlessness of Body. For where the Fluids to be separated, are separated in greater Plenty than usual by the salival Ducts, it is a Token that they are thicker and more viscid than to perspire with ease thro the cutaneous Passages. Such Fluids hinder the Blood's Expansion, and render it heavier and less susceptible of Motion: whence the Spirits are few, and those not very quick of Motion;

tion; wherefore of necessity the Pulse will be low and depress'd, and the Body listless. This Temperament is cold and moist; cold, thro too little Motion of the Blood; and moist, because the aqueous Parts will not sufficiently expire by the cutaneous Passages, on the account of their being too intimately entangled with viscid Particles; nor yet can they be sufficiently carried off by the salival Glands, because these are not able to supply the Defect of the other.

Signs taken from the Pulse.

§. 17. WE now come to explain those Signs which are to be taken from the Pulse; And because in Chronick Distempers, there is time enough for a prudent Physician to determine his Judgment from other Signs; therefore we shall explain only those which the Pulse affords in Fevers, and their Reasons.

§. 18. FIRST of all, a Pulse but little chang'd from that which is natural, but somewhat more quick, and a little higher, indicates in the beginning of a Fever, either an *Ephemera*, of one or more Days, or a malignant Fever.

§. 19. IF it be like to a natural Pulse, or equal, it signifies an *Ephemera*; but if it be sometimes like a natural Pulse, but not always, or unequal, then it denotes a malignant Fever. For since an *Ephemera* is the least of Fevers, or the least Augmentation of the Blood's circulatory Motion;

tion; the Pulse, which is its Effect, must be but little encreas'd, either as to the Magnitude of the Space possess'd by the Coats of the Artery, or the Number of the Strokes. And because in an *Ephamera*, which always depends upon some procatarctick Cause, there is none, or a very slight Disorder in the Blood, or of the Blood's Texture, but only an Error in its Quantity or Motion; for an Error in that (Quantity) necessarily infers an Error in this (Motion); therefore the Blood in this Distemper will be either as usual, or very near homogeneous. Whence the Contractions of the Heart, and Dilatations of the Arteries, being made by a nervous Fluid, and a Blood very near uniform to itself, they will be nearly the same, or the Pulse will appear equal in an *Ephamera*.

§. 20. BUT in a *malignant Fever* the Blood is unequally viscid and fluid, or it consists of some Parts more viscid than what naturally circulate in the Arteries, and of others in the same respect more fluid: whereof both, either alone or together, being mixed in various Proportions, flow thro the Vessels in different times. And therefore in malignant Fevers it may happen, and necessarily must do so, that the viscid sometimes flows thro those Arteries which we touch in order to feel the Pulse, mix'd with such a Proportion of the Fluid as is required to give the same Stroke which a natural Blood makes, and then

then the Pulse will be like what is natural; for since a natural Blood, or the Blood of healthful Persons, is compounded of Parts unequally fluid, there may be such a Mixture of the Parts of another Fluid, both with respect to themselves and to the Parts of the Blood unequally fluid, that its Fluxility shall be the same as that of Blood.

§. 21. BUT because the Blood in malignant Fevers is in different Vessels of the Body, to wit, Veins and Arteries, and in different Portions of the Veins and Arteries, of different Fluidities: therefore of necessity there will succeed Parts that have a greater or lesser Fluidity than natural. From whence the Pulse will be sometimes more quick and high, and sometimes more slow, and lower than natural, that is, often unequal.

§. 22. SECONDLY, a Pulse that is somewhat quicker and lower than natural, which rises after a Meal, and then returns to its wonted Quickness and Weakness, denotes a *Hectick Fever*. For a hectick Fever always is a Consequence of the Diminution of the humid Parts; because there then arises a greater Attrition of the more solid Parts of the Blood against one another, since in the present Case these are not so much diluted with Moisture, nor kept floating far enough from each other. From this greater Attrition there arises a greater Heat: This Heat in process of time lessens the Quantity of Blood, and so of course the

Quantity of animal Spirits; whence the Contraction of the Heart becomes weaker, and the Dilatation of the Artery is diminish'd on a double account: first, because a weaker Contraction of the Heart impresses a less *Impetus* upon the Blood in Circulation; and secondly, because a lesser Quantity of Blood occasions less to be thrown into the Arteries.

§. 23. BUT because in a less moist Constitution of Blood, that is, in a dryer, the animal Spirits become less watry; that is, their more moveable Parts will be in a greater Proportion than usual to those Parts that are less apt for Motion: and therefore, altho those Spirits are in a lesser Quantity than natural, yet because they are more apt for Motion, they will flow much faster into the Muscles, and therefore also into the Heart; whereupon proceeds a Hectick Pulse, that is, one more quick than natural. But after a fresh Meal, a new Supply of Warmth is administer'd to the Blood; for since the Heat of the Blood is the same as was the Heat of the Chyle, the Chyle cannot be mixed with a Blood beyond measure hot, as is that of hectick Constitutions; but a greater than usual Heat of this will be drawn forth by the Action of the other thereupon: so that by the Mixture of both will arise a greater Heat than usual. From hence it comes about, that after eating, the Pulse of a hectick Person becomes more frequent than

than usual; because the Spirits are render'd more apt for Motion, they being produc'd from a hotter Blood, or one in a greater Degree of Motion: And it is likewise higher, because of a greater Rarefaction of Blood, occasioned by a Heat greater than natural; as well as from its encreased Quantity by an Addition of a new Chyle: whence, upon a double Account, the Artery will be more dilated, and the Pulse heightned. But these ceasing, the Pulse returns to its wonted State.

§. 24. THIRDLY, in the beginning of a Fever, the smallest Pulse almost disappearing to the Touch, and unequal, denotes a *continued Periodical Fever*, (such as is that called *putrid*, having certain Exacerbations and Remissions) or *Intermitting*. For because continued periodical Fevers may be considered as compounded of many Intermittents; or rather, because both depend upon an unusual Viscidity of the Blood contained in the Arteries; therefore in the beginning of a Fit, wherein a great Quantity of this Viscidity is lodged upon the extreme Parts by the capillary Arteries, and consequently on the Brain, from whence can be produced but a small Efflux of animal Spirits; because they cannot be separated, but with Difficulty, from a Fluid so unusually viscid: so that from this lessen'd Quantity of animal Spirits, the Contraction of the Heart will be very weak, especially in comparison to the Weight to be moved, and

the Pulse will be almost imperceptible. But because the Spirits, separated from a viscid Blood, are reciprocally proportionable to that Viscidity; and since the Blood of such feverish Persons is unequally viscid, therefore they will be separated sometimes in greater, and at others in less Proportions: whereby the Heart will be sometimes more forcibly, and sometimes more weakly contracted, and sometimes quicker, and at others slower; and therefore will the Pulse be unequal.

§. 25. **FOURTHLY**, an intermitting Pulse in Children or old Men, is not so dangerous a Sign in Fevers as in those of a more florid Age. For in Children the Blood has not yet been sufficiently comminuted by repeated Circulations, (thro the Lungs especially) as to be rendered less unequally fluid; whence the Blood making a longer stay in the Brain, and coming there not always equally sated with Spirits, those Spirits will be separated unequally, and consequently will the Contractions of the Heart be unequal, and the Pulse intermit. Wherefore an intermitting Pulse is natural to a tender Age. Now in old Men the Canals in many Places are subsided or obstructed, from whence likewise their Pulse will naturally intermit: Wherefore in both these Cases the Pulse does not intermit from any Violence of the Disease. And for the contrary Reasons, is an Intermission of the Pulse of the worst Aspect in Persons who are seized

seized with a Fever in the Prime of their Age, unless the same is also natural to them in a State of Health.

§. 26. BUT an intermitting Pulse in the beginning of a Fever in Men of a middle Age, is not only in itself bad, but it more especially forebodes a *malignant*, or a *pestilential Fever*: Of which Class is the dangerous Fever accompanying the *Small-Pox*. I have met with a Pulse before the Eruption in that Distemper that did exceedingly intermit, and the Intervals of Respiration were exceedingly long; for both a *malignant Fever*, the *Pestilence*, and the *Small-Pox*, agree in having the same Lensor of Blood common to them all. From whence it is no wonder that young People are so subject to the *Small-Pox*, since their Blood is not yet become so homogeneous as that of Adults.

Signs taken from the Urine.

§. 27. IT now comes before us to shew what is to be learned from the Urine: and for the same reason given in the foregoing Discourse concerning Pulses, we shall regard only the Urine of feverish Persons.

§. 28. IN the beginning of a Fever, a Urine which has an even Hypostasis, not separating, and whitish, denotes an *Ephemera*, or *malignant Fever*. For in an *Ephemera* the Mass of Blood is hardly vitiated, and the Secretions are but little damaged;

and therefore the Urine in such Cases ought to be near to that of healthful Persons. But the Hypostasis of a healthful Urine is white, depending on an unknown Proportion of Salt and Earth; and the Hypostasis also of a healthful Urine is smooth and equal; because the Blood in such, as it washes thro' the Kidneys, is always similar to it self; and therefore in equal times it secerns equal and similar Quantities: whereby the Contents uniformly adjust themselves into their respective Positions, that is, the Hypostasis will be without Separation, and even.

§. 29. BUT in a malignant Fever, when the Blood is unequally fluid, the Urine may at some times be secerned like that of a healthful Person; that is, when a Portion of it arrives at the Kidneys of equal Fluidity with that of natural Blood; but Blood of another Texture immediately coming there, it will secern a Urine that will give another Hypostasis, or perhaps none at all; whereas in an *Ephemera* the Hypostasis is always the same, by the Bloods being not vitiated at all, or by its being uniformly so.

§. 30. SECONDLY, in a Fever Urine of a red and fiery Appearance, with a red and even Hypostasis, and accompanied with other Signs of a *continued Fever*, is a Forerunner of a Crisis; because such a Sediment proceeds from the Secretion of a great deal of Salt and Earth, and is a manifest Sign that the febrile Lensor is equally broke and digested.

§. 31. BUT if there are Signs of an intermitting Fever, and more especially if the Sediment resembles the Dust of Bricks, in the room of a perfect Crisis, there will happen only a partial one; that is, a true and formal Paroxysm of an intermitting Fever: For such a Sediment is as common to those labouring under *Intermittents*, as a white and smooth Hypostasis is to the Urine of healthful Persons.

§. 32. THIRDLY, whatsoever is signify'd by the Hypostasis of the Urine, the same, but with less Certainty, may be gathered from the Cloud which appears somewhat sooner: for since a Cloud is no other than a lighter and more subtile Hypostasis, tho' not quite reaching to the Bottom, it will discover a Solution of the grosser Parts; that is, that there is a Digestion began, or one at least attempting. But this is less and not so perfect, since the Cloud sooner appears than the Hypostasis; so that the time of the more perfect Solution is not yet arrived: Wherefore a white Cloud in the beginning of a Fever, if it be constant, denotes an *Ephamera*; and a red one, or somewhat darker, portends either the Crisis of a *Continual*, or the Paroxysm of an *Intermittent*.

§. 33. BUT the Signification of a Cloud will always be more uncertain than of a Sediment; because since there is always some Uncertainty in the Indications of the Hypostasis,

stasis, whereby the Event does not always answer; for hardly two Instances can be found exactly alike, wherein they are both of the same Texture: And since the Cloud properly has regard to the approaching Hypostasis, which does not always answer the Conditions of the Cloud; it follows, that the Crisis or Event of the Disease is less discernible in the Cloud, than in the Hypostasis; and therefore does it give a Prognostick one degree more uncertain. But yet so much the more Certainty does the Cloud afford, by how much the more it approaches to the Bottom; since the Sediment itself is nothing else than the Cloud quite fallen to the Bottom.

§. 34. FOURTHLY, the Urine wanting an Hypostasis in a Fever, and scarce having any Colour, being pellucid or watry, denotes Pain in the extreme Parts, or one more than ordinary in the Head; so that a *Rheumatism*, or a *Phrensy*, may soon be expected. For first of all, this Urine discovers the Fever not to be an *Ephamera*; because in that the Secretion is hardly at all affected: wherefore this Fever must be dangerous, wherein the grosser and harder Parts of the Blood come not to the Kidneys in that Quantity as is requisite for their Separation; and therefore they must adhere, if they are in any great Quantity in the extreme Parts, where the Force of the Blood by reason of its greatest Distances from the Heart is least, and there they cannot but occasion

occasion Pains. But all these happen in the beginning of a Fever: Yet if not in the beginning of a Fever, but some time afterwards the Urine appears pellucid, it signifies that there is not of that gritty Matter enough to stagnate in all the Capillaries, but so much only as may be detained in those Vessels where the circulatory Force is least of all, which is in the Capillaries of the Brain: wherefore by the remaining of such Matter behind, it comes about that the Urine is limpid, and from its Stagnation arise Inflammations, and a Delirium, that is, a Phrensy.

§. 35. FIFTHLY, some reckon the involuntary Excretion of Urine, or that which is made without sensible Perception, amongst the Signs taken from Urine, but improperly; for that Urine is not of any bad Signification as Urine, but as it is Urine so excreted: and therefore the same Prognostick might be equally taken from any other involuntary Excretion. Nor is that yet of so ill a Presage, as is vulgarly believed, but not so uncommon an Effect of a more deep Sleep; or of a Delirium.





C H A P. VII.

Of a Crisis.

§. 1. **I**T remains that we say somewhat concerning critical Days; but I had rather refer you to the Writers of Institutions, such as *Sennertus*, *Zypaeus*, *Waldschmidt*, and others: whence may be learned what Opinion the Antients had of a *Crisis*, and the Days they are expected upon. But we shall deliver what there is of Truth in this Affair in a few words.

§. 2. SINCE the Concoction of any morbid Matter, and the Humour to be secreted, is nothing else but a Change of it into such a due Magnitude or Smallness, as it may be carried by the circulating Blood along the Canals, and excreted by Vessels destined for that purpose; those very *Excretions* are the true Crises, (which Procedure may be easily enough understood by the Instance of Expectoration, which that it may be orderly effected does require the Matter to be expectorated, sometimes to be thickened, and sometimes to be attenuated;) it follows, that a Crisis may be made by any of the subcutaneous, intestinal, renal, or salival Glands. But if
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the morbifick Matter cannot be reduc'd to that Magnitude, or Smallness, which may correspond to the Orifices of the secretory Vessels; then either an Abscess or Hemorrhage will follow, if a Crisis is begun: and therefore Abscesses and Hemorrhages are to be reckoned less perfect Crises. But the Signs demonstrating the several Places where a future Crisis may be expected, are accurately remarked by *Sennertus*.

§. 3. BUT that the morbifick Matter may be reduced to a due Magnitude or Smallness, and its wished-for Discharge, there is requir'd a considerable time, if the Quantity of Matter be considerable; that is, if the Distemper be great and severe. And since there are a great many Causes, and those very constant, that may occasion the Blood, and offending Humours therein, to be of a different Fluidity in the Inhabitants of *Greece* and *Syria*; and to cause the Texture of their Blood to be of a different Cohesion and Quantity, from the Blood of *Germans* and *Britons*; it is impossible but that different Spaces of time should be required for the finishing Concoction in the Inhabitants of those different Climates, or that the same Spaces of time should ever happen to serve for both. Whence it follows, that but very seldom, and then as it were by a Miracle, it should happen for the same days to be critical amongst us which were accounted so by *Hippocrates* and *Galen*.

§. 4. WHEREFORE if we are to call
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that Excretion only a Crisis, which happens in the third or seventh Days, or on Periods compounded of third and seventh Days, then amongst us in *Britain* we should never have any Crises.

§. 5. I AM sensible that it is the Opinion of some Physicians in *Scotland*, that Crises happen in the manner assigned by *Hippocrates*. But those Physicians, who think they have met with the same, have been educated either in *France* or *Italy*, and there have imbibed those Prepossessions. And I am very positive, that in order to reduce a Crisis to those odd Days in *Hippocrates's* Account; they are sometimes obliged to compute the Time of the Beginning of the Sickness only from the Day in which the Patient took to his Bed: And again, at other times to show the Crisis to happen in the odd Days of the *Grecian* Account, they are compelled to fetch the Beginning of the Disease from some other time long before the Date of their Decumbiture; which Time they sometimes reckon from the first Complaints of the Patient, and sometimes from those supposed evident Causes of the Disease which precede a good while even the Complaints of the Patient. But even all these Ways do so seldom answer any Expectation, that now amongst the most judicious of the modern Physicians, very little regard is given to any critical Days at all.

§. 6. BUT the Causes of real critical Days, that is, such on which in our Country happens

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pens the last Concoction of the morbifick Matter, which is always attended with its Expulfion, are all thofe things which occafion the Humours to become of fuch a certain Magnitude or Minutenefs, and of a greater or leffer Cohesion; but with any given Power Bodies unequally large, or unequally cohering, cannot be concocted in an equal time.

§. 7. WHEREFORE it is to be found by the Observations made by all Nations amongft themfelves, what are the ufual Caufes and Conditions of thofe Difcafes, which require a certain and like number of Days to finifh fuch a Concoction in. And when there is a fufficient number of fuch Observations made, the Diftemper and its Circumftances appearing the fame, we may be able to foretel a critical Day with much more Exactnefs, than now it is in our power to do.

C H A P. VIII.

Of the Method of Cure.

§. 1. **T**HE *Method of Cure* has been fufficiently explained by *Sennertus*, *Zypaus*, and *Waldschmiedt*, as it has been delivered down to them from the Antients; and they have added nothing of their own, but all along readily given into their Errors, which we fhall make appear in a few words.

§. 2.

§. 2. PASSING over therefore the Definitions of an *Indication*, the thing *indicating*, and thing *indicated*, which every one may frame to his own Fancy; be it observed, that four *Indications* are falsely reckoned for four *Indicants*: that is, for the Cause of a Disease, the *Preservative Indication*; for a Disease, the *Curative*; for maintaining Strength, the *Vital*; and for the most urgent Symptom, somewhat without a Name.

§. 3. BUT, First, *Internal Causes* are so connected with the Disease, that if they are taken away, the Disease ceases; wherefore such Causes and the Disease cannot suggest different Indications, since by the same means both are to be removed. And *External Causes*, such as is a Sword that makes a Wound, suggests no Indication to a Physician, if, for instance, it does not still abide in the Wound: For if it yet continues in the Body, its Extraction is of equal regard with the Indication taken from the Disease itself, as the Removal of Slough, or cleaning a Wound; and not from any Regard of its being the Cause.

§. 4. SECONDLY, no Indication arises to the Physician from the Strength of the Patient: For besides that the Sound need no Physician, a *vital* Indication cannot belong to the Method of Cure, which is by all defined, *An Art, finding out by Indications, Means by which lost Health may be restored.* Wherefore an Indication for preserving of Strength, in any

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any sense different from a *curative* Indication, which supplies Means to restore Strength by the Subtraction of those things which lessen it, and the Addition of those things which may encrease it, does not concern a Physician, as engaged in any curative Intention; for the animal Powers of a sick Person are not to be preserved in the same Condition, but ought to be encreased or diminished, that his Life may be restored to a better State.

§. 5. **THIRDLY**, The urgent Symptom does not point out any Indication distinct from that of the Disease itself: For if, for instance, Pain only affects a Person, and that is called the most urgent Symptom, indeed a Removal of the Pain by any thing that is proper for such Purposes, is indicated; but then Pain is both the Disease, and the curative Indication. But if besides Pain there do arise other Symptoms, independent both of that, and of one another, whose Combination constitutes the Disease; then regard in Cure is to be had to every one of those Symptoms, and every one, more or less, does indicate somewhat to be done; and the Indications of all, both of Pain and the others together, make up that Sum or total Indication which is called the curative Indication.

§. 6. **AND** that this may be illustrated by an Example; let the Blood be supposed to stagnate in any Part, so that it may excite a Rheumatick Pain; the Disease itself will be an Ob-
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struction of the arterial Canal: what happens as a Consequence thereupon, is a Dilatation of that Canal, and that Dilatation perceived is Pain. It is manifest that all those Means which will effectually remove the Pain, will also remove the Obstruction and Dilatation; and all those things which take away the Obstruction, that is, the Dilatation, will also take away the Pain: wherefore the Remedy is Bleeding, which in this case avails more than all the Anodynes. Wherefore the Indication of the Disease, and of the chief Symptom, is the same.

§. 7. WHEN therefore Physicians say the most urgent Symptom does indicate, they ought to say, Of many Symptoms or Diseases seizing a Person together, that Symptom or that Disease, from whence the greatest and most immediate Danger is apprehended, ought principally and soonest to be removed. From whence also it is manifest, that the Disease may be urgent, and therefore that not the most urgent Symptom, so much as the urgent Disease, suggests new and distinct Indications.

§. 8. THERE is therefore but one *Indicant*, viz. the Disease; and only one *Indication*, which is the *Curative*, which was to be demonstrated.

§. 9. THE whole of the Method of Cure is this; either the Indication is taken from something without the Animal, or within it. If it be from something out of the Animal, but yet

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yet within the Body, *i. e.* in the Stomach or Bowels, then Vomits or Purges are always indicated; the former chiefly if it resides in the Stomach, and the latter if in the Bowels. All other Medicaments which are given in Diseases of the Stomach or Bowels, are not levelled at Diseases of those Parts directly, but at other Diseases in conjunction with the Diseases of those Parts; as for instance, in an habitual *Diarrhea*, Sudorificks are given: for this is a Disease of the Liver, and the Roots of the Biliary Duct are too much dilated by the Force of the Blood, being encreased from an obstructed Transpiration; and therefore the redundant Liquor is to be repelled thro the Pores of the Skin, when opened by Sudorificks.

§. 10. IF the Indication is taken from something within the Animal, it is to be taken from the Blood contained within the Veins and Arteries; all the Disorders of which depend upon its circulatory Motion being encreased or diminished: for all Changes in the Texture and Quality of the Blood are attended either with a Diminution or an Encrease of the Blood's Velocity.

§. 11. BUT if the Indication is taken from any thing within the Animal, that is not in the Veins or Arteries, then that Indication is taken from the Encrease or Diminution of some Secretion; and the Increase or Diminution of that Secretion is indicated, and

the Means most conducing thereunto are to be sought out.

§. 12. BUT if the morbidick Cause is neither in the Stomach, nor in the Bowels, nor Vessels, and yet within the Body; as when any thing is extravasated in the Viscera; then the Disease is incurable, because Nature does not allow of any ways by which it can be expelled. But if the morbidick Cause be extravasated in the Cavity of the Body, as, for instance, in the Cavity of the Breast, it then belongs to the Surgeon's Care. And this may suffice for what need be taught concerning *Indicants*, or the various Indications of Diseases.

C H A P. IX.

Of Things Indicated.

§ 1. **T**HE Writers of Institutions teach that the thing *indicated* is fourfold, *viz.* 1. Removing the Cause of the Disease. 2. Conserving Life. 3. Mitigating the most urgent Symptoms. (Here I shall just observe the most urgent Symptoms are reckoned four in number, *viz.* Pain, Watching, Fainting, and Hemorrhages.) And, 4. Curative; that is, taking away the Disease itself. But all these are for the most part erroneous.

§. 2. FOR the Method of Cure teaches to preserve Life, by taking away both the Symp-

Chap. 9. Of Things Indicated. 101

Symptoms and the Disease, and no other-wise ; so that there is no such thing as an *Indicatum Vitale*. But Symptoms are Diseases, and the most urgent Symptoms are the most urgent Diseases ; that is, such as will soon destroy the Animal, and therefore answer to them the *curative* Indications.

§. 3. BUT those Causes which are advanced by Physicians for universal, to wit, a *Plethora*, and *Cacochymy*, are themselves Diseases : we shall however comply with the common Usage of Expression.

§. 4. ALL Diseases therefore consist either in a Change of the Quantity of Fluids, or in a Change of their Velocity, or in a Change in their Quantity and Texture. We comply here with the common manner of speaking ; for all Diseases may be comprehended under a Change of Velocity. The Velocity or Quality in any manner altered (for Motion is a Quality according to our Doctrine) is called a *Cacochymy*. The Quantity altered, if it be by Encrease, is called a *Plethora* : But if it be lessen'd, or altered by a Diminution, a Food of easier Digestion and more nourishing than usual is indicated. But if it be altered by Augmentation, and makes a *Plethora*, then all Physicians agree that it indicates Bleeding. But if there should be a *Cacochymy*, or its Texture and intestine Motion be changed, then all agree, that Bleeding is not indicated ; but only Evacuation

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by Vomit, or Stool, or Urine, or Spittle, &c. or else by some Correction of the peccant Matter; which with most now-a-days passes for an Acid.

§. 5. I DO not deny Bleeding to be indicated in a *Plethora*, (the various Ways and Circumstances of doing which, may be found in *Sennertus's* Institutions, Book 5. Part 2. Sect. 1. Chap. 16.) but also in a *Catochymy* I am of opinion that not only Vomiting is indicated, &c. and Destroyers of Acidity, but preceding thereunto, and most particularly, Bleeding is required; and then too more especially when there does abound, or is thought to abound an Acid in the Juices.

§. 6. THAT I may make this apparent, I desire it to be remembred, *That every Body striking against another, and communicating part of its Motion thereunto, does lose so much of its own Motion, or is so much retarded.* Wherefore the Blood thrown out of the Heart, while it strikes upon the antecedent Blood, and drives it forward, transfers to it part of its own Motion, or loses it: that is, it is hindered by that, and so much retarded in its own Motion. Hence it follows, that if Blood be drawn out of the basilick Vein of the right Arm, then the succeeding Blood, or that carried by the Axillary Artery, or right Subclavian, will be less hinder'd in its Motion, than it was hinder'd before that Vein was open'd: For part of the Blood being taken away

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away by the opening of that Vein, there remains behind a lesser Quantity in the Axillary Vein, or less is contained between the further Extremity of the Axillary Artery and the Heart, than was there before: therefore the Blood being let out by the Vein, the Remainder in the Artery will be less hinder'd in its Motion than before. And therefore the Blood of that Artery which communicates with the Vein that is open'd, will flow with a greater Velocity after the Aperture is made, than it did before. Hence it appears, that while the Blood is flowing out of the Vein of the Arm, the Blood thrown out of the Heart into the Aorta, will find less Resistance in the ascending Trunk, than in the descending; and therefore it will flow faster in the ascending than descending Trunk: and thence too it will find lesser Resistance in the right Subclavian Artery, than in the left; for the Blood is not supposed to run out of the Vein of the left Arm, but of the right: and therefore it will run faster through the right Subclavian or Axillary Artery, than through the left. And lastly, it hence appears, that the Blood being let out of a Vein in the right Arm, the remaining Blood in the right Axillary Artery runs with a greater Velocity into the Artery of that Arm that is continuous to it, than it runs thro the Thoracick Artery, or the right Scapulary, which is likewise continuous to it; because when the Blood is not

supposed to be drawn out from any Vein corresponding to the Thoracick Artery, or into which this exonerates itself, there is a greater Impediment proportionally to the Motion of the Blood in the Thoracick Artery, than in that of the Arm: but because the Velocity of Blood in the Subclavian Artery or the right Axillary, is greater than in the left, the Velocity in the right Thoracick, will be also greater than in the left Thoracick Artery.

§. 7. WHEREFORE it is manifest, that the Blood being let out of a Vein in the right Arm, the greatest Velocity of the remaining Blood will be in the Artery of that Arm, because it immediately empties its Blood into the Vein that is opened; and the next greatest Velocity of Blood will be in the Thoracick Artery, or Scapulary, of the same side, going out from the Axillary Artery. But the Velocity of Blood will be far less in the Brachial, Axillary, and Thoracick Artery of the left and opposite side; but the Velocity will be the least of all in the Arteries arising from the descending Trunk of the *Aorta*.

§. 8. THESE things being premised, it appears that if we would prevent the Encrease of any Humour from the Blood stagnating in the left Leg, or bring it about that as little Blood as possible should flow to that Leg in any given Space of Time; we ought first to take away Blood from the Arm or Leg of the right

right side, and this is making a *Revulsion*; and again, we may draw away Blood from the same side, and from some Vein that receives the Blood from a Branch of that Trunk which transmits it to the swelled Part; and this is making a *Derivation*.

§. 9. FROM hence it follows, that they knew nothing of the Blood's Circulation, who plead, that a *Revulsion* and a *Derivation* are not consistent with the Circulation of the Blood.

§. 10. AS this Revulsion is of very great moment, so may its Consequences be of very great Duration, if either by this, or any other Vein, the Blood be drained away duly, and in a sufficiently large Quantity. And, that this may appear, I do affirm, that by Blood-letting, its Heat, from what Cause soever produced, may be abated; and its Viscidity also, whether from an acid, or any other coagulating Particles, may be destroyed.

§. 11. FOR since the Blood's Heat depends upon its circular Motion, by which the succeeding Parts strike upon the antecedent, and these again upon others which precede them; so that those included in the middle are both propelled by the subsequent, and impeded, that is, repell'd by the antecedent: it is manifest that the middle Parts will be more press'd upon, than if there were no antecedent; but a greater Pressure occasions a greater Collision of one Particle against another,

ther, which greater Collision causes also one Particle to be broke off from another with a greater Force; from whence it comes about, that the most moveable Parts, which were before wrapp'd up in others, will now by their Disunion get at liberty, and by the Quantity of their Motions produce the Effects and Appearances of Heat. But by opening a Vein, Part of the antecedent Blood is taken away, and thereby the subsequent will have more space to move in, and more liberty; and therefore the less will be the Pressure, and less the Collision of Parts, and of consequence will the Heat be diminish'd.

§. 12. A G A I N, let us suppose the Blood near to a State of Stagnation; and that some Part of it, by reason of its Viscidity, does actually obstruct in some Vessel of the left Leg or Arm, and distend that Vessel, so as to excite grievous Pain, as it frequently happens in Rheumatick, Arthritick, and Scorbutick Disorders: I say, that Viscidity and Pain indicate Bleeding in the right side.

§. 13. F O R since the Blood not only owes its Motion to the Heart and following Blood, but also to the Coats of the Arteries contracting themselves after Dilatation; therefore in every Artery thus too much distended with Blood, and by that hindred from contracting itself with due Force, the Blood which there obstructs will be lodg'd the faster, the longer and the more strongly that Artery continues
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in such Distention. Wherefore the Blood being drawn out of the opposite side, the remaining Mass will flow in greater Quantity, and with more Velocity into that Part, but with the least Quantity and Velocity to the Part affected in the left side: therefore the Arteries on the left side, and especially in the Part affected, will receive less Blood than before, and will be less distended, and therefore will they necessarily contract with a greater Force than before.

§. 14. WHENCE it comes about, that by repeating their Contractions with greater Quickness and Force, they will shake away at length the stagnant Humours, and get rid of them by the same Mechanism that the Stomach and Intestines, especially if they have the Assistance of a good Quantity of Liquor washing thro them, throw off a Chyle sufficiently viscid, and other Contents much more rough than any arterial Blood can be. Besides, the Contractions of the Arteries are more frequent and smart than the Contractions of the Intestines, and the Liquor washing thro them is in greater Plenty, and mov'd with a greater Force. Therefore whatsoever may be the Cause of a coagulated Blood in the Vessels, it will be thus taken away by Blood-letting; and this Effect will continue until such a Diminution of the Quantity of Blood is repair'd by a new Supply.



C H A P. X.

Of Secretion.

§. 1. **B**ECAUSE the Health of an Animal consists in having proper Secretions made from the Blood, and is to be hurt only by an Augmentation or Diminution of some of those Secretions; Health when lost, may be restor'd not only by Blood-letting, but by other Remedies that either enlarge the Secretions when too sparing, or check them when too liberal. And therefore when any Secretion is too large, it must be restrain'd; and if it be too sparing, it must be encreas'd by such means as are suitable for that purpose.

§. 2. **B**UT for the most part, and with the greatest Safety, an augmented Secretion is restrain'd by the Increase of some other Secretion in an opposite and remote Part: thus we stop a Diarrhea by vomiting, and a Catarrh by Diureticks, whence we see that a Revulsion is practis'd by all Physicians; insomuch that a due Management of the Secretions is of the greatest Use in the Art of Medicine.

§. 3. **B**UT the greatest Difficulty is concerning the Manner and Cause of different Secretions: almost all now agree, that the Urine, for instance, is separated in the Kidneys,
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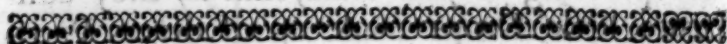
and the Bile in the Liver, because the Particles of the Bile are of the same figure with the Capacity of the Pores of the Hepatick Glands, and not with the Capacity of those Pores in the Renal Glands; and of the Urine the contrary.

§. 4. BUT in case this was true, it would not yet at all serve our Purpose; for of whatsoever Figure are the Particles of Urine separated in the Renal Glands, yet while they are separating they are fluid, that is, they constitute little Drops made up of divers Particles. For there is no one Gland of the Kidneys that separates only one urinous Particle at a time of such a particular Figure, because after that manner there would be nothing but Gravel transmitted into the Bladder; but it separates a Liquor or a certain Fluid, altho but in a small Quantity. And this Fluid easily changes its Figure, and accommodates itself to the Capacity of the recipient Pore.

§. 5. AND therefore whatsoever may be the Figure of those Particles which constitute this Fluid, yet as a Fluid, it will pass thro the Kidneys, unless something else hinders it. But it is only the Straitness of the Orifices of the Renal Strainer that does or can hinder it, and which will not permit that any Liquor more viscid, such as is that of the Bile, tho accommodating itself to any Figure, shall pass thro them. And herein consists the whole Mystery of Secretion.

§. 6. BUT the Medicaments contriv'd for
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the Promotion of every particular Secretion, may be met with amongst many Writers; particularly *Willis*, in his *Pharmacopœia Rationalis*, and *Emanuel König* in his *Mineral, Vegetable, and Animal Kingdom*, the last Edition. Wherefore it remains only, that I shew you the most concise Methods of reducing those Materials into proper Forms.



C H A P. XI.

Of the Method of prescribing Forms.

§.1. **A**N *Apozem* is made of Roots four Ounces, Herbs three Ounces, Woods two Ounces, Barks two Ounces and a half, Seeds one Ounce, Flowers half an Ounce, Spice two Drams; and the Quantity of Liquor ought to be eight times as much as the Sum of the Ingredients: and the whole may serve for four Doses.

§.2. A *MEDICATED Wine* requires that the Wine should be at least four times the Quantity of the infus'd Ingredients, and eight times as much at most; and the Quantities infus'd ought to be at least double of those Quantities when they are given in substance. If Catharticks are infus'd, the milder should be double the Quantity of the strong; and the Correctives should be a third of all the Catharticks together. If Alteratives are added to the Catharticks,

ticks, they ought to be at most four times the Quantity of the Catharticks.

§. 3. A P U R G I N G Draught for one Dose is proportioned with thirty-two Parts of French white Wine, or Rhenish, cold or hot, to one Part of the Ingredients; and in one Dose (which here I suppose to be in Infusion, at least one, two, three, or four Drams) with a third Part of what are called Correctors: And after it has stood in Infusion a whole Night in a close Vessel, and removed from the Fire, the strain'd Liquor is to be drunk alone, or with four, five, or six Parts of a Purging Syrup.

§. 4. A L O O S E N I N G Ptisan is made with the same Proportions of Catharticks, but with double the Quantity and Dose, at least, of the Liquor in which they are infus'd.

§. 5. A P U R G I N G Electuary is proportion'd with at least three times the Weight of Syrup or Honey as of Cathartick Powders: and if Cassia, or any thing of like Consistence is added, it is reckon'd to the account of Syrup or Honey. But if some other Electuary is made use of in the stead of these, then they say its Quantity ought to be quadruple the Quantity of Powders, with a sufficient Quantity also of some Syrup besides: but these are mistaken, for any Electuary may be taken in any Proportion to the Powders of the compound Electuary, in case some Syrup of about quadruple the Quantity of Powders be added: for two Electuaries

aries added together, yet make an Electuary.

§. 6. AN *Electuary* that is not purging, may be proportioned with the Quantity of Conserve triple to the Quantity of Candies, and sextuple to that of Confections; where again they err, who order the Quantity of all those to be quadruple to that of the Powders, and then to add also quadruple the Quantity of Syrup to that of the Powders: for the Powders may be of any Quantity, so that the Syrup us'd be four times as much, and besides that as much Syrup as there is of Conserves and Candies.

§. 7. A *BOLUS* is an Electuary of one Dose, and ought not to exceed two Drams.

§. 8. *PILLS* are an Electuary, with a third part, or somewhat less, of Syrup; and a Dose ought not to exceed two Scruples.

§. 9. A *JULEP* is made of distill'd Waters, or Liquor of the Consistence of Water, of which the Quantity ought not to exceed half a Pint, with two Ounces of Syrup, of Powders not exceeding two Drams, Confections one Dram, acid Spirits half a Dram, or of urinous Spirits the same Quantity; so that the aqueous Liquor be at least four times as much as the Syrup and Confection together, and the Syrup eight times as much as the dry Powders; for Salts we reckon with the Liquids. But if Syrup is not order'd, it is then called a *Mixture*, which is better than

Chap. 11. Of Prescribing Forms. 113

a Julep, and will keep longer: And therefore it may be prescribed in greater Quantities, observing however the forementioned Proportions, unless that sometimes the Quantity of Powders and Confections may be doubled.

§. 10. AN *Emulsion* is made with Fruits, such as sweet Almonds, Pine-Nuts, in equal Parts, and of the four cold Seeds, White Poppy Seeds, Henbane Seeds, and Turnsole Seeds in a *Mania* of equal Parts, (so that the Weight of the Seeds be quadruple at least of the Weight of the Fruits) to which is by degrees to be poured six times the Quantity of Liquor; and that Liquor is to be distill'd Water or Spring-water, or any Decoction that is not thick, and the Straining is to be sweetned with Sugar or Syrup. And sometimes Powders are added in small Quantities, for the most part Sugar of Lead, purify'd Nitre, and solid Laudanum, but the liquid is most convenient.

§. 11. *HYDROMEL* *small*, is with Honey, subdecuple of the Quantity of Water, and is boil'd to the Consumption of a fourth Part.

§. 12. *VINOUS*, is by boiling it away till there remains only a third Part.

§. 13. A *SUDORIFICK*, *Diet-Drink* is by the Water being twelve times the Quantity of Ingredients, and by boiling it half away. If it is not for sweating, the Water may be eight times as much as the Ingredients, and
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boil'd also half away: The same ought also to be observ'd in *Apazems*.

§. 14. A SECONDARY Decoction, call'd *Bachetum*, may be made by taking the *Residuum* of the Sudorifick Diet-Drink, with an Ounce of any other Sudorifick; or, which is better, neglecting the *Residuum*, and taking two Ounces of the Ingredients, and boiling them a whole Day in twelve Pints of Water, to the Consumption of a third or fourth Part.

§. 15. OBSERVE, that the *Sudorifick Decoction* requires, to the making it right, the Space of twenty-four Hours. And a *Sudorifick Purging Diet-Drink* does further require Catharticks in the same Quantity they are given in dry.

§. 16. AN *Eclegma* is with five times as much Syrup as pectoral Powders. In which also a Mucilage may be us'd for Syrup, and Sugar for Powders.

§. 17. LOZENGES are with four times as much melted Sugar as Powders.

§. 18. A LINIMENT is, for example, if to an Ounce of Oil or Mucilage is added one Dram of Wax, and half a Dram of Powder; but the Powder and Wax are seldom us'd.

§. 19. AN Unguent is with one Ounce of Oil, two Drams of Wax, and one Dram of Powder. Here observe, that instead of Oil may be us'd Lard, Marrow, Butter, Grease, Muci-

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Mucilage, Honey, or Turpentine; and for Wax may be us'd Gum.

§. 20. A *CERATE* is with an Ounce of Oil, half an Ounce of Wax, and two Drams of Powders.

§. 21. A *N* Emplaster is with an Ounce of Oil, an Ounce and a half of Wax, and six Drams of Powders. Observe, that in Plasters the Turpentine, because of its Viscidity, is reckoned as a Medium betwixt the Wax and Gums.

§. 22. A *CATAPLASM* is with three times as much Mucilage as Oil, and more than half as much Powder. And the Mucilage ought to be made first, by boiling the Roots and Seeds in Water.

§. 23. A *SINAPISM* is made with the Pulp of Figs and Powder of Mustard-Seed, of each equal Quantities.

§. 24. A *VESICATORY* in the Form of an Emplaster is, if, for instance, an eighth Part of *Spanish* Flies were kneaded into Mucilage-Plaster, with the help of a little Turpentine.

§. 25. A *VESICATORY* in the Form of a Cataplasm is, by kneading some *Spanish* Flies into some old Leven with Vinegar or Brandy.

§. 26. A *CUCUPHA* is with one Ounce of Roots, half an Ounce of Spices, dry'd Herbs three Drams, Flowers two Drams, Gums one

Dram, so that the whole ought not to exceed three Ounces.

§. 27. A *FUMIGATION* is with four Parts of Gums, and three Parts of Powders.

§. 28. A *PURGING Clyster* is with two Ounces of Roots, an Ounce and an half of Herbs, Seeds one Ounce, Flowers two Drams, or half an Ounce. When they are boil'd, Honey or Oil, or both if needful, are to be added to the strained Liquor, to the Quantity of an Ounce and half at most, of Lenitive Electuary at most two Ounces, and one Dram of *Sal Gem*.

§. 29. A *N Alterative Clyster* is proportion'd in the same manner.



of any other Disease; and it is indispensably
attended with a Rarification of the Blood, either
as its Cause or as its Effect.



Veins: And on the contrary, a State of Rare-
faction by any Cause induced into the Blood,
will make the Animal Spirit to be more ex-

The Philosophical and Mathe-
matical Elements of **PHY-**
SICK, &c.

ture of Antagonist Muscles, it will the more
frequently be contracted, and throw out its

BOOK II.

And because the Blood is more uniformly aug-
mented, and always of the same Tenour, the
Lute will also be equally quicker.

CHAP. I.
Of FEVERS.

§. 1. **B**Y the Term *Fever*, I under-
stand an *uniform Augmentation*
of the *Blood's Velocity*, that is,
an equal one in equal Spaces
of time. A Fever thus defin'd
is *simple*, and only of one Period; or legiti-
mate and true, and without the Concurrence

of any other Disease; and it is inseparably attended with a Rarefaction of the Blood, either as its Cause or as its Effect.

§. 2. F O R the Cause and Effect of Motion are inseparable. First of all, An Increase in the Motion of the Blood is the Cause of its Rarefaction, whilst it is transfus'd out of very narrow Arteries into more capacious Veins: And on the contrary, a State of Rarefaction by any Cause induc'd into the Blood, will make the animal Spirits to be more easily separated from so loose a Texture; that is, they will separate faster in the Brain, and by that means flow more plentifully into the Muscles and Heart. And as the latter is destitute of Antagonist Muscles, it will the more frequently be contracted, and throw out its Contents, and make the *Pulse more frequent*: And because such a Motion is uniformly augmented, and always of the same Tenour, the Pulse will also be equally quicker.

§. 3. S E C O N D L Y, Since the Blood is a Fluid endued with many small Parts, which can in their Perspiration affect the Organs of Feeling with a Sense of Heat, the Rarefaction, which always accompanies its increased Velocity, will also excite a greater Heat than ordinary, so as to be troublesome both to the Patient, and to By-standers.

§. 4. T H I R D L Y, This increased Velocity of Blood is the Reason, that in a given time, that is, in the same, more Blood will be

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contained in every Section of a Vessel than what is common; so that the Vessel will be distended oftner than usual. By which means also, since in every Distention there is in some measure a Solution of Continuity, when that is made oftner than usual, it will excite *Pain*. Moreover, by this Rarefaction of Blood, the Vessels being more distended than usual, will be excited chiefly *Pains in the Head*, because there are no Muscles therein to support the Vessels, and resist their Distention. For the same Cause Pains will happen in the *Back and Loins*, from too great a Distention of the Aorta, and that likewise too often repeated.

§. 5. **FOURTHLY**, Unusual *Watchings* are for the most part Attendants on this Pain in the Head, because the little Arteries in the Brain alternately restore themselves, wherein (so that it be a true Fever, without the Addition of any other Disease) the Cohesion and Weight of the Parts of the Blood are greatest, thereby preventing their wonted and necessary Restitution, and producing a continual Pressure upon the Nerves; so that thereby they occasion a continual Flux and Reflux of the Spirits.

§. 6. **FIFTHLY**, Those Spirits which by this means soonest get off from the Blood, and are most strongly propell'd, if they find any one Muscle more dispos'd for Inflation than another, they occasion *Convulsions* therein.

therein. But since that Disposition can arise only from a Diversity in the Make of the same Muscle in different Men (whilst we suppose nothing preternatural, but only a Fever as such, which is nothing but the Blood's Velocity uniformly encreased) therefore since that Diversity can seldom happen, Convulsions will seldom happen in a true Fever, than when it is join'd with some other Disease, as when it becomes a *malignant one*. And also for the same reason *Sleepiness* very rarely happens in a true Fever, before the Quality or Texture of the Blood is some way vitiated; that is, when it is thicker than usual, or some other Disease is join'd with it.

§. 7. SIXTHLY, By reason of an encreased Motion and Rarefaction, and that Thinness of Blood which follows thereupon, accompanied with a greater Dilatation of the Vessels, (that is, a Distraction of the Fibres from their mutual Contact) *Hæmorrhages* happen in the Vessels that are most easily dilated, and in those Places chiefly where the circulatory Motion of the Blood is strongest: And if such Hæmorrhage is large enough, the Fever will cease.

§. 8. BUT if a small part only can squeeze out to the Skin, then *Pustules* or *Spots* arise, generally of a red Colour. But if the Blood-Vessels are so strong as to prevent a Hæmorrhage, then by the Rarefaction and Quantity of Motion, the *Serum* will be so attenuated,

as to flow thro the Pores of the Skin in great plenty; and then the Fever will terminate in a Sweat. And if by such Motion and Rarefaction the cutaneous Pores are so dilated as to receive with the Serum also Particles of Bile, that Fever will then be said to be solved by a Jaundice.

§. 9. SEVENTHLY, Because the small Vessels running over the Face, and the extreme Parts, are inflated with rarefy'd Blood, the Face will look red, and the extreme Parts puffed up; and where the capillary Vessels are very much entangled together, so that the smaller are pressed upon too hard by the larger, they will be so squeeze'd as to occasion Inflammations.

§. 10. BUT because in a legitimate Fever there is nothing preternatural suppos'd to happen in the Blood besides the Augmentation of its Celerity, therefore such an Inflammation will be proportional to the Magnitude and Number of those Vessels. And this Propensity to Inflammation, or greater Fulness of the Vessels, will occasion that in every legitimate Fever the rarefy'd Blood will cause a Difficulty of Breathing.

§. 11. EIGHTHLY, This augmented Velocity, by thinning the Serum, will occasion a greater Expence of it by the common Discharges; from whence must arise a Dryness of the Tongue and Thirst, by the want of Spittle.

§. 12. AT the same time the Blood rarefying in the Vessels of the Stomach, and distending them, produces a Sense of Fulness, to wit, by pressing the nervous Coat after the same manner, by which Aliments taken in, are wont to press it: from whence there will arise a Cessation of Appetite; and when this Pressure continues long, it will occasion an Aversion to Food, which is always an Attendant upon a true Fever.

§. 13. NINTHE Y, Because there is nothing preternatural suppos'd in the Blood of a Person labouring under a legitimate Fever, besides an augmented Celerity; therefore the Urine of such will be like the Urine of healthful Persons, when they make water after they have been heated by the Sun, or by Exercise; for such in the Summer time is of a much redder Colour. The Urine therefore of feverish Persons will be somewhat higher coloured, and less in quantity, without any other Change: for it will be less in Quantity, because a great Part of the diluting Fluid will be drawn off otherwise by means of an encreased Velocity; and higher coloured, because its aqueous Transparency proceeds from that diluting Fluid.

§. 14. HENCE it appears that a legitimate Fever, that is, when there is no other Disease accompanying it, or Seeds of any other Disease, does make its Onset without any sense of Cold or Shaking, unless external

retal Cold has any share in being the Cause thereof: And then, by reason of an obstructed Perspiration, the Quantity of Blood must needs be encreased; from whence there will also be a greater Quantity of animal Spirits, and consequently much stronger Contractions of the Heart, and the Blood will be thrown out more forcibly in every Contraction: where by it will arrive at every Section of the Arterial Tube much sooner, either within or without the Brain; whence again, a quicker Separation of Spirits will be maintained to flow to the Heart, and so the Celerity of the Blood will continue greater.

§. 15. A F T E R the same manner, a legitimate Fever arises upon *Drunkenness*, of what Nature soever may be the Liquor drank; so that it be drank in too great a Quantity, or in Quantity enough to occasion too great a Rarefaction. In like manner also a Fever proceeds from *Anger*, because that Passion is accompanied with an augmented Velocity of the Blood and animal Spirits. From whence it is apparent, that a legitimate and true Fever does arise from some *Procatartick Cause*, that effectually and immediately produces an augmented Velocity in the Blood.

§. 16. B U T if a Fever is accompanied with any other Disease, or if to an augmented Velocity of Blood, some other Fault in the Blood or solid Parts is also join'd; for instance, a *Lentor* of the Blood, or an *internal Ulcer*,
or

or an *Abscess*; then that Disease is not to be pronounc'd a *simple* Fever, but a Fever *complicated*, or with an *Adjunct*. And therefore in considering that other Disease, and its Cause, we ought to have regard to some Property in the Blood, or Alteration of its Motion, that does not proceed alone from an equal and uniform Augmentation of its Motion, but from the Symptom constituting that other Disease.

§. 17. WHEREFORE, that this may be the better apprehended, it is necessary to consider that those external and evident Causes which do not immediately and forthwith encrease the circular Velocity; but after some space of time, excite not a Rarefaction alone, and Symptoms depending upon an Augmentation of Motion only, but many other Symptoms: As for Example, too violent a Heat of the Sun immediately encreases the circular Velocity, and a feverish Rarefaction of the Blood; but Cold does not cause a Fever but in some Space of time: in which Space the Blood necessarily grows thicker, and other Symptoms are produced different from those which arise only from an augmented Circulation, and which accompany a Fever occasion'd thereby.

§. 18. THIS kind of Fever therefore is not legitimate or simple: And consequently, altho so much of the Disease as consists in an Augmentation of Circulation and Rarefaction is uniform, yet the whole Complex of Symptoms

oms which attends it, and which in conjunction therewith passes under the general Denomination of a *Fever*, is not an equable and uniform Procedure as to the Cause or Effect, but is distinguishable into Periods.

§. 19. AND if the Cause producing a Period (part of which is also an augmented Velocity of Blood) produces a new Period in any given time, before the foregoing quite ceases, the Disease will be a *continued periodical Fever*.

§. 20. BUT if it does not produce a new Period until a certain time after the former has finish'd its Course, it is then called an *intermitting Fever*.

§. 21. IN both therefore, whether a *continued periodical* (for the Distinction of a *continued erratich* is not worth our regard) or an *intermittent*, according to the Number of Hours between the Periods, it is call'd a *Quotidian*, a *Tertian*, a *Quartan*, &c. and with some Adjunct signifying it to be continual or intermitting.

§. 22. FROM hence it follows, which yet will hereafter further appear, that there is no such thing as a *cold Fever*: or if there be any, it ought also to consist in an augmented Circulation of Blood; for otherwise it would give no Proof of its Existence, from which it might be known: But such *cold Disorders* are oftentimes the Concomitants of *Fevers*.

§. 23. I SAY therefore, that every Fever is either simple, and has no other Disease join'd with it, on which it depends, and then it is a *simple continued Fever*, of one only Period; or it is the Companion of some other Disease on which it depends: and according to the Nature of which Disease, it is either a *continued Periodick*, if between the Periods there is no Interval of Time clear from the Disease, and the Periods return at *certain times*; or a *continued Erratick*, when the Periods return at *uncertain times*, or not continued, but *intermittent*, if there be given some Interval of Time between the Periods, that is entirely free from the Fever: That is to say, a Fever is an equable Augmentation of the Blood's Circulation, either *remitting* or *intermitting*.

§. 24. W H E R E F O R E since it is easy to reduce all Fevers under these Distinctions: A Fever really and properly so, may be various, according to the Degrees of Efficacy in the evident Causes; as an *Ephemera*, properly so called, for instance, an *Ephemera* of many Days, a *simple Synochus*, or a Fever from *Rarefaction*; a *putrid Synochus*, or what is called a *continent Fever*; and a *hectic Fever*, which goes on uniformly, excepting that the Pulse and Heat are slightly rais'd after eating.

§. 25. A L L these kind of Fevers are legitimate or simple Fevers, properly so call'd, consisting of many Periods, and free from Remissions

missions and Intermissions : nor do they in any other manner differ, than in the degree of Velocity in the circulating Blood, and the consequent Rarefaction ; and Heat, the Effect of both : the various Degrees of which produce Symptoms, which to the Unskilful may seem to be very different.

§. 26. WHICH may be better understood, by observing how different are the Effects, which proceed from only the different Degrees of Heat. As for example, the Summer Heat elevates Oil in a Thermometer to seven Degrees and a half ; the Heat of the Skin to seventeen Degrees ; the Heat of boiling Water to fifty, or two and fifty Degrees ; the Heat of red hot Iron elevates it to three times the Height of boiling Water. Wherefore by supposing the natural Heat of our Flesh to be double the Heat of Air in Summer-time ; and the Heat of boiling Water to be quadruple the Heat of a healthful Man in *Great-Britain* ; and lastly, that the Heat of red-hot Iron is only twelve times greater than the Heat of such a Man's Flesh ; there is no Symptom in Fevers so much different from another, as are those Effects produced by the Heat of a Man's Flesh, and the Heat of red hot Iron, and which only have different Degrees of Heat for their Cause.

§. 27. BUT to continued periodick Fevers ought to be reduc'd, a burning Fever call'd *Causus*, a *colliquative* Fever, and an *Epiala* of both

both kinds; in the first whereof the internal Parts seem cold, while the exterior are hot; in the second, the internal Parts are hot, whilst the external Parts are cold; moreover a *malignant* and a *pestilential* Fever; amongst the last of which is justly reckoned the *Small-Pox*.

§.28. LASTLY, *Intermittents* are in these Parts sufficiently known to all. The *continued periodical* seems less *simple* and *uniform* than the *Intermittents*. And therefore we shall lay down the Theory of *Intermittents*, from whence may be also understood what is a *continued periodick* Fever.

§.29. BESIDES the Symptoms of an augmented Velocity and Rarefaction, which constitute part of the Increase and the Height of this Distemper, during the Fit there is remarkably felt an *Increase of Weight* upon the Body, and a *Listlessness to Motion*; then a *Cold* beginning about the extreme Parts, and a low Pulse; afterwards a *Heat* begins to glow in those Parts nearest to the Heart, and as it approaches the Extremities, the Pulse rises; and lastly, a *Sweat* finishes the Fit. I here speak of a *regular Intermittent*. The *Listlessness* and *Heaviness* of the Body is only apparent, not real; and it proceeds from a Scarcity of animal Spirits, or from an Obstruction of the Parts, into which the Blood and Spirits cannot flow, so as by rarefying to inflate the Muscles destin'd to move and lift up any Part. And the Scarcity of animal Spi-

rits

rits will arise either from a Defect of Blood, or from its unusual Viscidity : for now we do not suppose the Blood to be too much rarefy'd in the Brain, and by that means pressing the Nerves too much ; as we do when we are speaking of the first Perception of the cold Fit.

§. 30. THEREFORE, if there be no Defect of Blood, the Heaviness of the Body with a Sense of Cold, must proceed either from the Obstructions of the Capillaries about the Extremities of the Body, or from the Blood's being too thick in those Parts. But since the Pulse is also low, or the Artery but weakly distended, the Blood must be less rarefy'd, whence that Obstruction is necessarily from too great a Thickness of Blood.

§. 31. BUT when Heat afterwards arises, the *Lentor* being washed out of the Arteries into larger Veins, (where there is more room for Rarefaction) and from these into the Heart and Lungs ; and the Heat being perceived in the Parts nearest the Heart (where the Velocity is greatest) sooner than in the Extremities and most remote Parts, it is manifest that the Motion and Rarefaction of the Blood is encreased ; whereby the obstructing Viscidities being broken, *Sweat* breaks out, and there is an End and Determination of the Fit.

§. 32. BUT because it was said, that a Fever, properly of itself, is nothing else than

an augmented Velocity of the circulating Blood; therefore since at every Influx of Blood from the Heart into the *Aorta*, the Arteries are thrust outwards, that is, there is a *Pulsation*, but when the Blood does not flow out into the Artery, there will be no *Pulsation*; it follows, that a quick Pulse must be the Effect and Sign of an encreased Velocity of the Blood, whether thick or more fluid: and if it be thick, it cannot but be render'd more fluid, during the Encrease of its Velocity.

§. 33. WHEREFORE, to come to the Cure, it is manifest that the Cure of a legitimate Fever, accompanied by no other, is most expeditiously done by Bleeding, and by Remedies which abate the Blood's Rarefaction; such as Sugar of Lead, purify'd Nitre, Spirit of Sulphur, Juice of Lemons, distilled Vinegar, Emulsions of the greater cold Seeds; and more especially Blisters made with the Powder of Cantharides, which draw off part of the *Serum*, which is too much rarefy'd.

§. 34. BUT it is to be remarked, that Blood-letting during its Performance does increase the Blood's Velocity; but such Augmentation quickly ceases, and a slower Motion is soon the Consequence of the Blood's Diminution in Quantity.

§. 35. AND these are the Remedies, which the best Rules of Medicine have hitherto supply'd us with in a legitimate Fever: but if any one should have the good-luck to find out a

Remedy

Remedy that will immediately abate the Blood's Rarefaction, and diminish its circular Motion, without bringing on any worse Symptoms; such Remedy ought to be preferred to Bleeding. But till such a one is found out, Bleeding must be prescribed.

§. 36. HERE carefully is to be observed, that we do not rashly administer Sudorificks in a legitimate Fever; because they will keep up the augmented Velocity and Rarefaction much longer: And we ought never to prescribe such, but when there are Signs of Concoction (which before were not) in the Urine. And such Signs will denote it not to be a legitimate Fever in every respect, but a Companion to some other Disease; which arises from a Viscidity of Humours, capable of Concoction.

§. 37. AND when this Viscidity begins to be so broken, as to be capable of Separation in the Kidneys with the *Serum*, it is a sign of a Concoction: and when the same Matter, which can pass the renal Strainers, by a further Diminution is rendered fit to be carried thro the cutaneous Glands in Sweat; then, and not before, Sudorificks may be administer'd with Safety: which time may be discovered by the Signs of Concoction in the Urine, which is a Sediment equal and copious with regard to the Disease. And thus much concerning *legitimate* or *simple* Fevers, and their Cures.

§. 38. BUT the Cure of a *continued periodick Fever* cannot be well understood, without being first taught the Cure of *Intermittents* as such; becaule the Cure of *Periodicks* is compounded of the Cure of a *simple Fever*, and an *Intermittent*, as such respectively.

§. 39. THEREFORE unless old Age, or a worn-out Constitution forbids, at the longest Distance from a subsequent Fit in an *Intermittent*, a Vein ought to be open'd; both upon the account of the Fever which threatens when the Fit is at the highest, and upon account of the Viscidity, from whence it has its Origin: for Bleeding diminishes the Viscidity of the remaining Mass.

§. 40. AND since this Viscidity for the most part has its rise from what is taken in by ways of Diet, and the *Lentor* is derived from the first Passages; and becaule Vomits more effectually remove such *Lentor* than Purges, and by the necessarily greater and more frequent Contractions of the *Abdomen*, press out that *Lentor* which adheres to the small Vessels in a short time, which Purges would hardly reach in an Age: and becaule Delays are dangerous in a Fever, therefore a Vomit ought always to be timely enough given, for its Operation to be over before the return of the Fit. Nor will one Vomit only be sufficient; it should therefore, if the Patient is able to vomit, be repeated twice, and sometimes oftner, unless he is wont to vomit up, or spit Blood.

But

But the ordinary Disorders of the Eyes ought not to deter any from this Practice; because it rather conduces to their Removal, than does them any Prejudice.

§. 41. AFTER an *Emetick* has been repeated as often as was thought convenient, and the next Fit after the last Vomit is over, some *Febrifuge* Medicines (though improperly so called) ought to be given, that are directly appropriated to an *Intermittent* as such. Those Medicines in strictness should rather be call'd *Attenuating* or *Aperient*, because they are suited to a Disease produced by a Lensor or Viscidity, and which accompanies or excites a Fever.

§. 42. SUCH a Medicament is composed generally of *Bitters*, and such things as in some measure astringe the Bowels, but not too much; and promote the other Secretions, to wit, by Urine, and insensible Transpiration; or which restore at least those which were lost to their natural Condition and Quantity.

§. 43. AND here before all others the *Peruvian* Bark bespeaks our Regard, or the *China-China*, as some call it; which may be exhibited to the quantity of half an Ounce, or an Ounce in the Interval between two Fits: Care being taken, that the last Dose be given six hours before the Return of the next Fit, if possible.

§. 44. THIS Method is easily comply'd with in *Tertians* and *Quartans*, but with some

difficulty in Quotidians ; of which we shall give an Example in a Youth of fourteen Years old, labouring under an intermitting Quotidian Fever. The *Fit* lasted from four a-clock in the Afternoon to seven on Sunday, April 24. 1688. At Eight the same Night, he took two Drams of the *Peruvian Bark* in *Syrup* of *dry'd Roses*, in the Form of a *Bolus* or *Electuary*. The same was repeated at Six in the Morning on Monday, at Ten, at Two in the Afternoon ; and because the *Fit* did not return at Five a-clock, it was again repeated at Six and Ten that Evening. Again on Saturday following he took in the Evening two Drams of the *Bark* ; the same Quantity on Sunday, Morning and Evening ; the same likewise on Monday, in the Morning and Evening ; and, lastly, two Drams was repeated on Tuesday Morning : Whence it appears that each *Series* of the *Bark* was in Quantity half an Ounce, and so he was freed from the Distemper.

§. 45. BUT in intermitting *Tertians* and *Quartans*, the Sum of the Series of Doses ought always to amount to six Drams at least, or one Ounce : and after eight days to be repeated ; and as much more again after the second Course of eight Day's distance.

§. 46. INSTEAD of the Powder of the *Bark*, this *French* Preparation of it may be given.

‘ TAKE one Pound of the *Bark*, and
‘ pour upon it two Pints of Spirit of Wine, in

‘ a Matrafs that will then remain one third
‘ empty, and often shake it.

‘ LET the Matrafs be stopped close, and
‘ set in a Sand-Heat of a moderate Warmth,
‘ often shake it, and when the Spirit of Wine
‘ has got a purple-red Colour (which is a Sign
‘ that it has dissolved the resinous Parts of the
‘ Bark) let the Heat be somewhat raised, and
‘ so continue it, till the Spirit is highly satu-
‘ rated, and then let it cool; after which,
‘ strain it two or three times thro a Linen-
‘ Cloth, pressing it hard, and put the strain’d
‘ Liquor into a Bottle.

‘ LET the *Residuum* be again put into a
‘ Matrafs, and set in a Sand-Heat; pour upon
‘ it two Pints of *French Wine*, and order it as
‘ before: and when both by Colour and Taste
‘ it appears to have taken up all the saline
‘ Parts of the *Bark*, let it be strained as be-
‘ fore.

‘ MIX these two Liquors, and put them
‘ together into a Glass Cucurbit, or a glazed
‘ earthen Pan, so that they may evaporate in
‘ a moderate Sand-Heat, scraping and brush-
‘ ing off from the Sides of the Vessels the re-
‘ sinous Parts, so that they may fall down in-
‘ to the remaining Liquor. After the grea-
‘ test Part of the Moisture is wasted, let the
‘ Remainder be put into a Glass Vessel, which
‘ again must be put into a Sand-Heat, with
‘ three Ounces of the Syrup of *Kermes Ber-*
‘ ries; and then with gentle stirring, and a
‘ care-

‘ careful Heat evaporate the rest of the Moisture, until it becomes of the Consistence of an ordinary Extract ; and of it may be given in the same manner, from half a Dram to a Dram and a half ; and four Doses at least in the Intervals of the Fits.’

IN the room of the *Bark* may sometimes be given to advantage, the Roots of *Gentian*, Bark of *Sassafras*, and *Camomile* Flowers, and in the same Doses as the *Peruvian* Bark.

§. 47. IF a Looseness or Vomiting should happen, then *Laudanum* is to be added to the Medicine ; and at any other time too, when there is no Looseness, the Disease will sooner give way, and more perfectly, by a mixture of *Laudanum* with every Dose of the *Febrifuge*. Whence the Operation of the *Bark*, in some measure comes to be known to us ; and especially since *Stipticks*, and things no ways opening, are of service in this Distemper.

§. 48. BUT that this may be yet the more understood, it is to be observed, First, That Sudorificks of quick and immediate Operation rarefy only the watry and thinner Parts of the *Serum*, because these alone can suddenly rarefy to any great degree, and immediately break out into Sweat. Secondly, Although all the thicker Parts do not immediately rarefy, and divide by the Actions of the thinner Parts upon them, so as to be all thrown out in Sweat at one Paroxysm ; (for when

when one Paroxysm 'is over, another will come again from the same Causes) yet they may, without any Sweat appearing, be so far broken, that although they cannot soon pass through the cutaneous Passages, yet they will notwithstanding very easily and readily pass thro the Capillaries of the Blood-Vessels that are remote from the Heart, which are larger than the sudorifick Pores: by which means no further Fit will appear; for there will be no further Obstruction from too great a Viscidity, nor stop given to the Blood in the Capillaries, from whence arose Cold, Shivering, and the like.

§. 49. FROM hence it is manifest, that some time ought to be allowed for those Medicaments, vulgarly called *Febrifuges*, before the Fit, that they may be comminuted by the Attrition of the Stomach, and thereby render'd serviceable in attenuating the morbidick Matter.

§. 50. AND because five hours at least are requir'd for the Digestion of our Food, and carrying it into the Blood-Vessels; therefore six hours, if the Circumstances of the Distemper will permit, are to be allowed to the *Bark*, for its sufficient Comminution in the Stomach and Lacteals, and that it may divide the viscid Parts of the Blood enough, that before the next Fit they shall be rendered capable of passing all the capillary Blood-Vessels without difficulty. And this also is confirmed by our
Ex-

Experience, which teaches us that this *specifick Drug*, given in too small a time before the Fit, is not so successful in driving it away.

§. 51. FROM these Considerations it also follows, that a *Salt* or *Spirit* of the *Bark*, and *lixivial Salts*, or any other *Spirits*, can do but little Service against intermitting Distempers. And those Medicines which manifestly thicken the Blood, tho they are said to attenuate the *Serum*, by drawing it off in any manner whatsoever, must in these Cases be prejudicial. And, lastly, a *Febrifuge* in this sense ought to be a Medicament of such a nature, as if it were composed both of *Solids* and *Fluids* at once, and these readily operating and rarefying.

§. 52. LASTLY, it hence follows, with the Confirmation also of Experience, that no *Catharticks* ought to be given after the Course of the *Bark*; since Catharticks, and especially the stronger, if they arrive at the Blood, fetch out the aqueous Parts only thereof; whereby the rest are less diluted, and grow more thick: whence the Fever again returns, as we daily find it to do. And if they are not strong enough, so as to reach to the Blood, they cannot then be supposed able to remove the Disease.

§. 53. WHEREFORE I return to the Cure of a *continued periodick Fever*, which may be better illustrated by Example, than by a long Ratiocination.

A ROBUST Youth, A. B. being shook for two days together in the Month of *April*, 1694. with a *Rigor*, attended with continual Reaching to vomit, on the third day began to be afflicted with a Pain in his Head, with Giddiness, Restlessness, Difficulty of breathing, Weariness, Heat, Thirst, and had a low and quick Pulse.

THAT day he was let blood, and in the Afternoon a Vomit was given with Oxymel, and large Draughts of Posset-Drink; in which were boiled a handful of the Tops of the lesser Centaury, to every Quart of Liquor.

AFTER the Vomit, a Clyster was given with Success, and he was much relieved by the Vomit. That night he was allowed for his common Drink Spring-water, sweeten'd with equal Quantities of Syrup of Lemons, and Syrup of Violets, and acidulated with Spirit of Sulphur.

ON the fourth day, in the Morning a Julep was prescribed him, composed of 'Car-
' duus and Mary-gold Water, each two
' Ounces; Treacle-Water, two Ounces;
' Crabs-Eyes prepared, two Scruples; dul-
' cified Spirit of Salt, or dulcified Spirit of
' Nitre, one Scruple; Syrup of Lemons, one
' Ounce.'

HE took a Spoonful at a time, when thirsty or faint; and also to promote a Sweat, which by the Appearances in the Urine, and a raised Pulse, seemed at hand. He sweat plen-

plentifully for three hours, when on a sudden that went off: to restore which, was prescribed, 'Carduus-Water, six Ounces; Treacle-Water, two Drams; dulcified Spirit of Salt, one Scruple: mix together for one Draught.'

THIS he soon brought up again, yet notwithstanding broke out into a Sweat, in which he continued four hours.

AT Night going to Rest, he drank an Emulsion made with common Water, the four greater cold Seeds, white Poppy-Seeds, and Syrup of white Poppies: That Night he passed very quietly, and tho his Sleepings were interrupted, yet they were large, and he became lightsome thereby.

THE fifth Day most of the Symptoms began to abate; but red and elevated Spots, like Pustules, appeared upon his Breast.

TOWARDS Night growing worse, as usual, he drank again of the foregoing Emulsion.

ON the sixth Day he bled at the Nose; and he then brought up by Vomiting much yellow and bitter Matter, and was disturbed in his Head.

HE was then ordered to be let Blood in the Foot; and after that he was vomited as before. But while it was in consultation what further to do, towards Night a Sweat arose, and after that again Vomiting, but not so bitter as before, the Fever decreased; and then

then the Emulsion compos'd him to Rest.

ON the seventh Day he seem'd in every respect in good order; but the Pustules kept out till the eighth Day, when they began to disappear. On the seventh Day he took no Medicines, nor on the eighth.

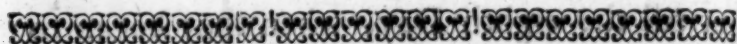
ON the ninth Day, about Evening, he was on a sudden troubled with a Defluxion of *Serum* from the Glands about the Mouth; whereupon he took 'Diascordium, one Dram; and Conserve of red Roses, half a Dram;' with which he slept well; and the same was repeated four Nights together, and so he recovered.

HAD a *Delirium* arose, we should have applied a *Blister-Plaster* to his Neck.

§. 54. FROM this Example it is easy to discern, that the Cure of a *continued periodick* Fever (and this was a *continued periodick Quotidian*) is compounded of Blood-letting, which is peculiar to a *legitimate simple* Fever; and of Vomiting, which properly tends to the removal of an *Intermittent*, and its Cause; and that the other Parts of the Cure ought to be fram'd after the like manner: So that if the *Remission* had been considerable, although it could not have been call'd a distinct *Intermission*, yet in the periodick Intervals, the *Peruvian* Bark ought to have been given.

HENCE it naturally follows, that Purg-
ing does mischief in these Cases, especially
that

that which reaches the Blood, because it too much keeps up the Blood's Rarefaction.



CHAP. II.

Of an APOPLEXY.

§. 1. **A**N Apoplexy is a Privation of internal and external Sensation, and of all Motion, unless a weak one of the Heart and Thorax; always with a Swooning, and sometimes with a Fever, and seldom with Froth about the Mouth.

§. 2. IT is known, that if by any means a Nerve is tyed and compressed, the Part to which that Nerve is directed, loses its Sense and Motion.

§. 3. AND it is likewise manifest, that if any Nerve is cut, there distils out a Liquor; and it is the Interruption of the Passage of this by a Ligature, or Compression, that is to be deemed the Cause of the defect of Motion and Sense.

§. 4. LASTLY, it is apparent that Motion is performed by reason the nervous Fluid is impelled by the Force of the Arterial Blood thro the Nerves into the muscular Fibres; and that Sensation is from hence, that Objects compress, or strike upon the Extremities of the Nerves by their Motion, and drive back the

the nervous Fluid towards the Brain. Whence it follows, that in Sensation there is an Undulation of the nervous Fluid, or a Protrusion of the Nerves inwards, from the Extremities towards the Brain.

§. 5. AN Apoplexy therefore, which is a Privation of all Sense and Motion besides that of the Heart and Thorax, is produced from any Cause, which hinders that Inflexion of all the Nerves, unless of those which are destined to move the Heart and Thorax.

§. 6. BUT the means by which the Motions of the Heart and Thorax remain, or of the Pulse and Respiration, when the other Parts are deprived of Motion, is because in every Motion which is performed by Muscles having Antagonists, a Quantity of nervous Fluid must be derived into the contracting Muscle, not only equal to that which is derived at the same time into the opposite Muscle, but also greater; for otherwise the Part to be moved would remain in an Equilibrium without Motion: and therefore more of the nervous Fluid must pass into a Muscle that has an Antagonist, than that which has none. But the Heart is a Muscle that has no Antagonist; and consequently does it require a less Quantity of nervous Fluid to continue its Motion, than other Muscles destined for the Motion of the Limbs.

§. 7. WHEREFORE if the Cause hindering the Undulations of all the Nerves is such, that

that no Juice could flow thro the Nerves, the Heart itself would cease from Motion, and so Death ensue. But if the Cause be not so powerful as to take away all the Motion of the Fluid thro the Nerves, but so far only resist their Dilatation, that but a very little Fluid can pass thro them, not sufficient to inflate those Muscles which have Antagonists; then those Muscles only will be contracted which require the least Quantity of Spirits; and such is the Heart.

§. 8. THIS Impediment that prevents the animal Spirits from those Undulations which are necessary to Sense and Motion, may be of two kinds, *viz.* such as is *out of the Vessels*, or that *in the Vessels*: And this is the only useful Division of an Apoplexy.

§. 9. *OUT of the Vessels* may be reckoned any Blood which extravasates from some Vessel in the Brain, that presses upon it; or any other Fluid ouzing out of its broken Canals within the Brain, and endued with a compressive Force: as also, præternatural Stones, Bones, or Tumours, bred and contained within the Skull. And this is a Species of an Apoplexy that is incurable, and suddenly comes upon a Person, without any foregoing Tokens, or Warning for a Remedy.

§. 10. *WITHIN the Vessels*, such things as hinder the Undulations which are the Authors of Sense and Motion, and whatever too much extend the Arteries woven into the

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Pia Mater; as those Arteries which spread over that Part of the *Pia Mater*, that is wrapped round the Trunk of all the Nerves at the great Foramen of the *Occiput*. Now those Vessels are too much extended either by too great a Quantity of Blood, or by that which is too adhesive or difficult to be moved.

§. 11. AND this is the only Species of an Apoplexy that is curable, and pointed out by some foregoing Symptoms, either of a *Cacochymy*, or a *Plethora*; a *Plethora*, I mean, either of a long or short Duration.

§. 12. SINCE therefore the second Species of an Apoplexy depends upon an Infarction of the Vessels of the Brain, which contain Blood, either in too great a Quantity, or too viscid, and which consequently must compress the Nerves; it is manifest that whatsoever empties those Vessels, or is able to lessen the Cohesion of the Parts of the Blood, must be Remedies in this case, if their Operation is efficacious and quick enough.

§. 13. AND all things which operate with dispatch for this purpose, are, *First*, Whatsoever makes immediate Evacuation. *Secondly*, All things which occasion Pain and Uneasiness: These things may also be used against the first Species; since, besides these, there is no Remedy practicable: and it is better to try a doubtful one than none at all.

§. 14. IT was said, that all things which readily evacuate, and all things which induce

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Pain

Pain and Uneasiness, were indicated in an Apoplexy; because by these means that Compression which arises from an Infarction of the Vessels in the Brain, is more expeditiously and more safely removed, than by any other.

§. 15. THAT this may be demonstrated, I affirm, that the Vessels can by no means be so expeditiously evacuated as by Phlebotomy, Vomits, Catharticks, and the strongest Clysters, and other things which excite Pain; neither can the Viscidity of the Blood be more expeditiously and safely removed by any other means.

FOR this Proposition is most certain, *That the Blood is to be drawn away, wheresoever its Quantity is to be diminished, or its Viscidity, or its Adhesion to the Vessels, is to be removed.* As also is the following most true; *Whatsoever induces Pain, makes the Muscles and Vessels contract more forcibly, and throw off the Viscidities which stuff them up with the greatest Expedition.*

§. 16. TO Apoplectick Persons therefore of every Age, and in any State of Strength, (which Strength is not to be estimated from the present, but from the former Condition of the Patient) first of all Blood is to be drawn from the Right Arm in a large Quantity, and then it is to be taken away from the Jugular Vein.

§. 17. BLOOD being taken away (which ought to be done if possible before the Injection

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jection of a Clyster) a Vomit is to be administred, and that strong, and in a large Dose. Therefore to the more robust may be prescrib'd Emetick Wine, made with the *Crocus Metallorum*, to the Quantity of two or three Ounces at least; to which may be added also an Infusion of *Sena*, or five or seven Grains may be given of *Mercurius Vita*.

§. 18. THE Reason why *Emeticks* are given with advantage in Apoplexies, (*Etmuller* wonder'd at this Practice because he understood it not) is upon the score of their inducing Uneasiness, which always in the more violent Vomits or strong Catharticks, either is the Cause of Evacuation, or an Attendant upon it: and therefore all those things which operate most forcibly either upwards or downwards, do service to apoplectick Persons, for the Reason given in the second Proposition above.

§. 19. AFTER an *Emetick*, altho the Disease seems to give way, some of the stronger *Purges* ought to be administred, amongst which I commend the *Elaterium* (that is, the inspissated Juice of the wild Cucumber) four Grains of which dissolved in a little Spirit of *Castor*, or exhibited in a Spoonful of Syrup of *Buckthorn*, is to be prefer'd to all other Catharticks.

§. 20. BUT if a *Vomit* or *Purge* do not answer as soon as wish'd for, and any thing is necessary to hasten the Operation of Medicines upwards and downwards, a *Clyster* of

the most efficacious Ingredients may be injected; *viz.*

‘ TAKE Leaves of Sena, three Drams,
 ‘ or half an Ounce; boil in a Pint of Spring-
 ‘ Water, and strain out half a Pint; in which
 ‘ straining dissolve Electuary of the Juice of
 ‘ Roses, half an Ounce, or of Hiera Picra
 ‘ two Drams; adding two or three Ounces
 ‘ of Emetick Wine, shaked together thick,
 ‘ so as to mix for a Clyster.’

§. 21. THOSE things moreover are us’d to rouse apoplectick Patients, which are offensive by their Scent; such as are *urinous Spirits*, or the *Spirit of Hartshorn*, *Spirit of human Blood*, and *acid Liquors* put into Motion and rais’d by the Heat of a red-hot Iron. For all these do service on account of their inducing Pain; because by no other Qualities they are in possession of can they be imagined to do any good to apoplectick Persons with Expedition enough; since they can be neither easily nor expeditiously conveyed into the Blood, which moves so slowly, especially to the Brain.

§. 22. FOR the same reason *Cupping-Glasses* without *Scarifications* have their Use, apply’d to the Back or to the Thighs, and then afterwards repeated upon the Head, after it has been shaved: and if yet Blood enough has not been taken away, let them be repeated with *Scarifications*.

§. 23. IF all other things likewise are yet of no effect in the *Paroxysm*, a *burning hot Iron* may be put to the Head or Neck, or both; for this makes both Pain and an Evacuation.

§. 24. AND while these things are doing, in order to give as brisk a Motion as possible to the Blood, a Mixture may be poured down the Mouth by Spoonfuls; such as this:

‘ TAKE Bryony-water compound, two Ounces; Treacle-water, one Ounce; Tincture of Castor, three or four Drams; Spirit of human Blood, or of Salt Armoniack, one Scruple; which mix.’ Or the following;

‘ TAKE of the *Amsterdam* Antiparalytick-water, two Ounces and a half; Spirit of Hartshorn, half a Dram; Salt of Amber, half a Scruple; mix together.’

§. 25. BUT if the Patient be found out of the Fit, and nothing has as yet been done, then Blood ought first to be taken away, and Catharticks given, but both more moderately; and those things neglected, which are contrived to bring the Patient to his Senses more, by giving Pain, than by making any Evacuation: and the forementioned Mixture may be qualify’d with one Ounce of the Syrup of *Stachas*.

§. 26. MORE OVER, a *Vesicatory* made with *Spanish Flies*, and *Hysterick Plaster*, may be apply’d to the Neck; and a *Seaton* may be

also made, which will be of uncommon Service.

§. 27. AS a *Preservative* from an Apoplexy, is used a Decoction of the Woods and Bark of *Guaicum* and *Sassafras*, made with equal Parts of Water and Wine, or the same boil'd in the like Quantity of Ale; drinking every day in a Draught of such Decoction Spirit of Sal Armoniack, one Dram; or the *London* Spirit of *Earth-worms*, one Ounce. The foregoing Mixture, with the Juice of *Stachas*, may be also used.

§. 28. THE Method here laid down, will equally agree to old and young Persons, and in what they call a *pituitous* Apoplexy, as well as a *sanguine* Apoplexy.

§. 29. BUT we shall conclude this Account of Apoplexies, with a Relation of an antient Woman, whose Head was open'd by the ingenious Dr. Cole, (a Physician who has wrote concerning animal Secretion) after she dy'd of an Apoplexy. This Matron had been long afflicted with an *hysterical* Disorder, and was always relieved with an Hæmorrhage at her Nose; or in case that did not happen, by Phlebotomy: with the Disease and Want, she grew much emaciated, and the Inconveniences of a great Age hastening upon her, a little before her Death she was so follow'd with *hysterick* Symptoms, that she seem'd to live as it were in the Grave: but upon her Nose again burst-
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ing out with Blood, she return'd to her Health, but very weak, and extremely wasted in Flesh. About a Month after, the same Hæmorrhage threatening a Return, she too hastily had recourse to *Styptick Remedies*, advis'd by an *Empirick*: When, on the same Day, she complain'd of a great Pain in her Head, and fell down apoplectick; and before the Surgeon, who was sent for to let her Blood, came, she dy'd. In her Head, which was open'd (nothing being found amiss in the middle or lower Ventricle) the Blood-Vessels on the left side of the *Pia Mater*, where the Pain was complained of, were turgid beyond measure, with a very serous Blood; but in the Ventricles of the Brain nothing was found but what was natural. This Intumescence of the Vessels was the Cause both of her Pain and sudden Death: and the Appearance of the Blood which flow'd out may instruct us, that Phlebotomy is needful even in those Apoplexies called *pituitous*.

THE *Diagnostick*, *Prognostick*, and other common Signs may be seen in *Riverius*.



C H A P. III.

Of a PALSIE

§. 1. **A** PALSIE is a Privation of Motion, or Sense of Feeling; or both, proceeding from some Cause below the Cerebellum, in all or some Parts receiving Nerves from the Medulla oblongata below the Cerebellum; joined with a Coldness, Softness, Flaccidity, and, at last, Wasting of those Parts.

§. 2. FROM this Description it appears, that the Brain or Cerebellum is not affected by a Palsy; and therefore the internal Senses, and the Motion of the Heart and Thorax, or the Pulse and Respiration, are not necessarily interrupted or destroyed: But if the Cerebrum or Cerebellum were affected, the internal Senses would, slightly at least, be disturbed; and it might be possible for a slight Apoplexy to follow upon a Palsy.

§. 3. IF therefore this Privation be in all the Parts below the Head, except the Thorax and Heart, it is wont to be called a Paraplegia; if in one side only, it is call'd a Hemiplegia; if in some Parts only of one side, it is wont to be called a particular Paralysis.

§. 4. FROM hence it is manifest, that the Palsy is a Disease akin to an Apoplexy; which not being sufficiently attended to by *Etmuller*, occasion'd him unnecessarily to distinguish between a *Paraplegia* and a *Hemiplegia*, as distinct Diseases from a Palsy.

§. 5. THAT the Causes of a Palsy may the better be understood, it is needful to consider, that this Disease is threefold, *scil.* a *Privation of Motion*, the Sensation remaining; or a *Privation of Sensation*, Motion remaining; or lastly, a *Privation of both together*. And this is the most useful Division of a Palsy.

§. 6. THE *first Species* therefore of a Palsy is that in which the Motion of all the Parts below the Head, or of some of the Parts only, except that of the *Thorax* and Heart, is taken away, the Sense of Feeling yet remaining. And that the Cause of this may be made the more intelligible, we may remember, that by the tying a Ligature on any Artery, the Motion of that Part is destroyed, to which that Artery is accustomed to convey the Blood: From whence it follows, that the Blood, or some Parts of the Blood, are required as necessary for muscular Motion. But in the foregoing Discourse concerning an *Apoplexy*, it was remark'd, that an Influx of the nervous Fluid into the Muscles was likewise necessary to the Motion of the Parts. From whence it is easy to conclude, that to the Production
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of Motion in any Part, there is necessarily requir'd a free Passage both of the Blood and animal Spirits into the Muscles allotted for the Motion of that Part, that is, a Concourse of both Fluids.

§. 7. BUT this Proposition is also very certain, and necessary to be known, in order to the right understanding this Affair. *v. g.*

BESIDES the Conflux of the nervous and arterial Fluids to move any Part, there is also required a sudden Rarefaction, or an Expansion of them into Bubbles every way, either of one or other, or of both, as they flow into the Muscle. And hence also arises this other known Truth:

NO Part can be moved, unless the Muscle belonging to that Part is contracted in its Length: But a Muscle cannot be contracted in Length (by the Rarefaction, suppose, of the Fluids flowing into it) unless it be stretch'd in Breadth; and unless the solid Part of a muscular Fibre is suddenly forced outward from the Quantity of Liquids flowing thereinto.

§. 8. THESE being rightly understood, a Reason may be given how a Paralysis without Motion is brought about. First of all, by too great Humidity stretching the Fibres in length; whether such Humidity is internal, or communicated to the Blood, or innate, by reason of a moist Temperament, Climate, Season of the Year, or Diet; or external, and collected upon any particular Muscle. Secondly,

condly, From cold things, and all others that thicken, and hinder Rarefaction ; insomuch that swimming in cold Water, wet and thin Garments, lying upon Stones, handling of Snow or Ice, will bring the Palsy. *Thirdly*, From external Compression by Tumours, Falls, Luxations, Bruises, and the like. *Fourthly*, From hot things, as too much Wine, Narcoticks, and a Peripneumony ; all which by their Heat straiten the supple Membranes and Vessels, that is, the animal Canals in their Distentions.

§. 9. HE who understands aright the foregoing Propositions, will easily perceive how these Causes destroy Motion, because they affect the Blood or Muscles ; the former by thickning it, so that it cannot suddenly rarefy ; and the latter by relaxing them into too great a Length with too much Moisture, or contracting them into too narrow Dimensions by too much Heat. But the Sensation may be yet preserved, because notwithstanding all these Hindrances, the animal Spirits and Nerves may not be touched, or as yet at all affected.

§. 10. THE *second kind of Palsy* is, when *Feeling* is lost, and Motion remains. Its Causes are ; *First*, all those things which so far thicken the animal Spirits in the Nerves, arising below the *Cerebellum*, that tho they may indeed flow into the Muscles thro those Nerves, and there, by the Occursion of some Liquor secreted from the Blood, rarefy, yet they cannot alone

alone flow in such Quantities into the Nerves, as from a very slight Cause to undulate in Waves: whence Sensation will cease, without losing the Motion of the Part. *Secondly*, The Causes of this kind are also whatsoever render those Nerves more lax and moist, and so less apt for lively Vibrations: in the mean time the animal Spirits flowing into the Muscles. From whence Motion is performed without Sensation in the Parts affected. *Thirdly*, Its Cause may be a Restraint from Venery, as in the Maid mentioned by Dr. Harvey.

§. 11. FROM the Explanation of these two kinds of Palsy, it is easy to understand the *third sort*, in which both *Sense* and *Motion* are lost, because this is compounded of the other two. It remains, that after enumerating their Causes, we give the Methods of removing their Effects. And because that Species is worst, wherein both *Sense* and *Motion* are lost together, it is manifest that such Means as are effectual to overcome this kind of Palsy, cannot fail in conquering the other two.

§. 12. WHEREFORE upon having regard to the manner by which a Palsy is produc'd, and the Cause from whence it arises, it is manifest that such Medicines are indicated (unless in those Cases where the Disease is owing to the too great use of warm things, or the too great Quantity of hot Blood, which seldom happens) which

which move upwards and downwards, such as those described in the Cure of an Apoplexy, excepting Phlebotomy; since there is not so much Danger, nor that so urgent, in a Palsy as in an Apoplexy, unless it has its Rise from hot Causes.

§. 13. FIRST, for example, the Patient is to be treated with Vomits, and then Purges, tho in lesser Doses than in an Apoplexy, always injecting a Clyster before such Vomit or Purge: as,

‘ TAKE Leaves of Sage and Rue, each one Handful; Rosemary-Flowers, two Puggils; boil them in a Pint and a half of Water, to one Pint: in all the strain’d Liquor, or at least eight Ounces, dissolve of the Electuary Diaphanicon, one Ounce; of the Electuary of Juice of Roses, half an Ounce; Oil of Bays, one Ounce; Tincture of Castor, three Drams; Hiera Picra, one Dram or two Drams; and mix for a Clyster.

§. 14. SUCH Clysters may be given in the Intervals of Purging; and if the Patient dispense but indifferently with Vomiting and Purging, they may be injected every Day.

§. 15. BUT if the Case is not desperate, nor the Patient in danger, Vomits above all things are to be administred, tho in lesser Doses than in an Apoplexy; but not to lay by the Use of those Clysters in proper times.

§. 16. IN having recourse to Catharticks, such as contain *Falap* and *Turpeth* in them,
 † are

are preferable to all others: and because such Patients may easily enough swallow Pills, the following may be given.

‘ TAKE of the *Amsterdam* Catholick Extract, or of the *Edinburgh* ecphractick Pills, half a Dram, or two Scruples; Salt of Amber, five or seven Grains; Resin of Jalap, half a Scruple, or fifteen Grains; Elixir of Property, a sufficient Quantity to make them into Pills for one Dose.’

THE Ecphractick Pills of the *Edinburgh* Physicians, are :

‘ TAKE Gum Ammoniacum dissolv’d in Elder Vinegar, nine Drams; Myrrh, and the Feculæ of Bryony-Root, of each two Drams and fifteen Grains; Leaves of Sena and Agarick, each one Ounce; Tartar of Vitriol, and Salt of Tamarisk, each one Dram and a half; Extracts of Gentian, Saffron, and Juniper, of each forty five Grains; Balsam of *Peru*, two Drams and a half; Aloes, eight Ounces; Syrup of Buckthorn, a sufficient Quantity to make into a Mass for Pills; to every five Ounces of which add *Diagridium*, one Ounce and a half, and one Dram of Oil of Cloves.’

OR in the room of these may be given the *London* or *Amsterdam* Pills with *Agarick*; or the *London* or *Amsterdam* *Pil Cochia* the greater, half a Dram or two Scruples.

§. 17. BUT if Liquids are desired, then two or three Spoonfuls, or two or three Ounces of an Infusion may be given; which Infusion may be,

‘ TAKE of Jalap and Turpeth, each
‘ half an Ounce; Salt of Tartar, and Ginger,
‘ of each one Dram, or four Scruples; Spirit of
‘ Wine, one Pint: digest them in a moderate
‘ Heat for four Days.’

IF the first Dose does not answer, then to the next add a Draught of the Infusion of Sena, made with white Wine: as for example, an Infusion of

‘ SENA Leaves, from two to three
‘ Drams; infuse them in four Ounces of
‘ white Wine cold all night.’

§. 18. AND while Purges are made use of at proper Intervals, warm *Unctions* and *Frictions* may be of service between whiles; such as *Riverius* prescribes. Amongst the Oils in Esteem for these purposes, that made with Earth-worms washed in white Wine, and digested in a Sand-Heat, is much the best: To which also may be reckoned the common Oil of Earth-worms, as an excellent Remedy in such Cases; and likewise the Oil of Bricks. These ought to be rubbed into the Parts affected with *Hungary-Water*; or, which is preferable, with *Sal Volatile Oleosum*, or the *Aromatic Spirit of Sal Armoniack*.

§. 19. AFTER such things as are universally good have been used more than once, it may be of service to make Issues between the

the Shoulders; and to use a Diet-Drink that is effectual in scouring the Passages, and wearing away the sluggish Humidities by the Sudorifick Orifices: amongst which, Decoctions of the *Woods*, especially of *Guaiacum*, are most to be esteem'd.

§. 20. WHEREFORE Paralyticks may use the following Decoction:

‘ TAKE of the Wood and Bark of *Guaiacum*, each three Ounces: steep them in twelve
 ‘ Pints of clear Water for fourteen Hours;
 ‘ then boil away to four Pints: adding towards
 ‘ the end, that is, about a Quarter of an Hour
 ‘ before it is finished, half an Ounce of Liqueo-
 ‘ rice; stoned Raisins, three or four Ounces.’

OF this the Patient may drink half a Pint warm in a Morning, so as to sweat with it, and use it afterwards as common Drink, so that three or four Pints may be taken in a day, for some days together, or till the Paralytick Limb becomes well.

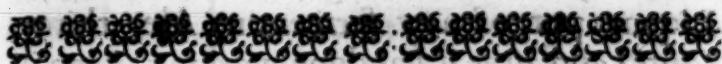
§. 21. LASTLY, after a Course of these, *Guaiacum-Wine*, or *Ale*, may be used for common Drink; such as the following:

‘ TAKE of the Wood and Bark of *Guaiacum*, each one Pound; the Wood and Bark
 ‘ of *Sassafras*, each half a Pound: put them in-
 ‘ to unfermented Ale, fixty Pints; and boil a-
 ‘ way to thirty Pints, adding, half an hour
 ‘ before the boiling is finished, of Sage and
 ‘ Primrose Leaves, each two Handfuls; of
 ‘ the Flowers of both, and of Rosemary-
 ‘ Flowers,

‘ Flowers, each three Pugils. To the strain’d
‘ Liquor put of new fermenting Ale, thirty
‘ Pints; and after it has done working, keep it
‘ for use.’

§. 22. BUT because during the Fit a Paralytick ought to be allowed a convenient Food; therefore we shall advise that kind of Broth, which is not inelegant, and by which the excellent and honourable Mr. *Robert Boyle* was cured of a Palsy, joined to the Assistance of the common Medicines used in such Cases: which was as follows.

‘ TAKE four Pints of Water, wherein had
‘ been boiled a good deal of Veal; or of ordinary Meat-Broth: and put thereto, when almost
‘ enough, of the Leaves of Harts-Tongue, Pennyroyal, Violets, and Strawberries, of Liver-Wort, Baum, Maiden-Hair, and Dandelion, of each one Handful; of Marygold Flowers, two Pugils; stoned Raisins, and Currants, each half a Pound; sixty
‘ Earthworms, having their Heads and Tails cut off, and being open’d with an Iron
‘ Skewer, then rubbed with Salt, and well washed in *Malaga* Wine, or clean Water.
‘ They are to be put into the Broth after it has boiled, and been scummed; and then boil
‘ it again to the Consistence of a Jelly, over a gentle Fire a whole Day: when it is
‘ strained, make use of four Ounces twice in
‘ a Day.’



C H A P. IV.

Of a VERTIGO.

§. 1. **A** VERTIGO is the Appearance of visible Objects that are without Motion, as if they turned round, attended with a Fear of falling, and a Dimness of Sight.

§. 2. NOW since the animal Spirits cannot turn round in the Brain, the Fabrick of the Brain not admitting thereof; therefore the Cause of this Disease is to be explain'd after another manner by Physicians.

§. 3. I SAID in the Definition of this Disease, that it is an *apparent* circular Motion of Objects that are really at rest: whence it is manifest, that the Object view'd always keeps its Place. Therefore since this circular Motion is not apparent, either in the things themselves, or Objects, nor in the animal Spirits; we must seek for it in the optick Nerve, or in the Eye, or in something therein situated, whether Canal or Humour.

§. 4. AND it is manifest, that an Object will seem to move circularly, if the Images which proceed therefrom fall successively upon different Parts of the *Retina*: as for instance,
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going towards the Left Side, while the Object is really without Motion, and the Images flowing therefrom always represent the same Distance, such an Object, I say, will appear moving in a Circle; for in the *Retina* the Images are reversed, and painted in a contrary Situation. And this may be done when the Object is at rest, and the Eye only moved; for whether the Object moves, and the Eye is at rest, or the Object rests, while the Eye is moved, the Rays streaming from the Object will not fall upon the same Part of the Bottom of the Eye: And therefore since we judge of the Changeableness of Place in which an Object exists, from the Changeableness of the Place where the Object is painted, an Object absolutely at rest may seem to turn round by an Eye in Motion.

§. 5. A GAIN, the Object and Eye being both without Motion, if the optick Nerve alone be in Motion, the Rays will not always fall upon the same Place; and therefore, since a right and an oblique Incidence do not excite the same Tremors in the Nerves, and the same Species of Motion, if the Optick Nerve only be moved, and the Object be at rest, it will appear to shift its Situation, that is, by the Change of Place in which it is represented.

§. 6. THESE being touched upon in general, I affirm that the Causes of a *Vertigo* are all those things which can move either the

Eye, or the optick Nerve, or the *Retina*, the Object being at rest, or that can excite a Fear of falling, and an Apprehension of turning round, when all those things are at rest, as well as the Object.

§. 7. BUT that I may more exactly delineate this Matter, I say that the Causes of a Vertigo are, *First*, Whatsoever is able to excite the Apprehensions of falling or turning round; the Object, and *Retina*, and optick Nerve being all at rest: of which nature are the looking upon things which turn round, and the looking down from a high and narrow Precipice, especially if People are naturally fearful. For since the Apprehension arising from the Sight of other things turning round, is accompanied with the Image and Remembrance of falling, (for in Childhood we have been accustomed a thousand times to fall in that manner) therefore it is accompanied with all those things which also accompany a Fall; and therefore with Fear: and as that Fear is attended with a *Tremor* of the Nerves, Rays from any Object will strike upon those Nerves when undulating, that is, when moved; whence an Object will seem to be in Motion after the same manner, as if it was really in Motion, and the Nerves under no such Vibrations from Fear.

§. 8. BUT *looking down* from high and narrow Precipices occasions a *Vertigo* by this means; because Experience has taught us how easily

easily we slide or fall off any oblique or declining Position, where there is nothing to support us: and therefore whensoever we are set upon a high Place and look round us, from a natural Timorousness we imagine how easy it is to fall off thence; and that because the Fear and Apprehensions of falling recur irresistibly to our Minds. And from such recurring Apprehensions of falling it cannot be but that at the same time should recur the Images of things turning round; because when we fall we describe a Circle round our Feet as a Center, and so the Earth and Sky will on a sudden seem to interchange their Places. Nor is it also possible but that the Nerves should by their Tremors represent the Images of turning round: and therefore those things which we then see, will transmit Rays into the Eyes, while the Nerves are shaking; and consequently from thence they will appear to be in a circular Motion.

§. 9. AND because when we are placed on high, we cannot but be solicitous about keeping our Body steady, lest we endanger our Lives by falling; and in the mean while Fear hinders the animal Spirits from being rightly directed by our Wills into those Muscles that stand in need of them, by its disturbing the Mind's Attention and requisite Tranquillity, insomuch that the least Force imaginable is sufficient to put the Body out of an Equilibrium: it follows, that an

irregular and less certain Motion of the Muscles must follow, from whence arises stumbling, and then Fear; which occasions also greater stumbling, and at length quite falling down.

§. 10. *SECONDLY*, The Causes of a Vertigo are whatsoever can induce a Sense of turning round when the Object is at rest, and the optick Nerve and *Retina* in motion; of which kind are turning round one's self, Drunkenness, Anger, the Heat of flatulent Meats, (that is, such as are easily disposed to rarefy) violent Exercise, an Obstruction of the ordinary Evacuations, Hunger, a Pressure of the Brain by the Arteries near the optick Nerves, and lastly a Southern Constitution of Air.

§. 11. *FOR* all these things occasion that the *Retina*, with the optick Nerve, being put in motion, does not receive the Rays from Objects upon the same Part of the Bottom of the Eye, but sometimes in one Place, and sometimes in another; from whence it comes about that whilst the Images change their place upon the *Retina*, they will affect our Apprehensions with Objects continually shifting their Situations.

§. 12. *THESE* being premised concerning the Causes of a *Vertigo*, it is convenient to observe, that that sort of a *Vertigo* only which arises from the Causes under the second Head, are properly to be reckoned belonging to the Physician's Care. And whosoever carefully considers these, will find that

the

the Effects which they have upon our Bodies for this purpose, is only by an Extension of the Arteries, by their lateral Pressures, or a Concussion of the *Retina* and optick Nerves, arising from the Arteries being stretched or pressed.

§. 13. T O the Removal therefore of such sudden Extension, whether it be *Sympathetick* or *Idiopathick*, it is necessary to draw some Blood out of the Veins, unless the Distemper has its rise from Exinanition, or Want: for a *Vertigo* is a-kin to an Apoplexy, but more to an Epilepsy, and we find it easily changed into these, and especially into the latter; and then such things ought to be given, which hinder an Expansion of the Blood, or an Obstruction of the Vessels: or if that is already obstinate, and will not give way to Phlebotomy, more forcible Means must be used.

§. 14. F I R S T of all then, let a Vein be cut, and Blood drawn away. Then, since a *Vertigo*, in the common Opinion, is for the most part sympathetick, and proceeding chiefly from some Faults of the Stomach; and whether this is so or not, in the next place an *Emetick* is to be administer'd, either such as we above prescribed in an Apoplexy, or as we shall hereafter prescribe in the Cure of an Epilepsy, seeing this has such a Likeness to a *Vertigo*. For Emeticks, since they operate quickly and powerfully, will by that means remove the Cause of distending the Arteries

beyond their natural Capacities, whether it be by the Quantity, or by the Rarefaction of the Humours.

§. 15. THEN after the Administration of Emeticks once, or oftner, according as it may be judged needful, let the Antepilepticks hereafter to be mentioned, be given. But because there is some Diversity between a *Vertigo* and an *Epilepsy*, as well as there are some Circumstances in common to them both; and because there are some Remedies given, which are peculiar to either: therefore we shall here trace those which are most adapted to the Nature of a *Vertigo*. From the animal Kingdom therefore I prefer to all others dry'd *Peacock's Dung*: and it is deservedly recommended to be given with the *Conserve* of *Corn-Poppy Flowers*, or with *Sugar*, or with prepared *Crabs-Eyes*; adding thereunto *Salt of Carduus*, with *Amber*. This, I say, I prefer to all others; not that the *Dung* of other Birds or Animals is more vile in itself, but because that is to be prefer'd in Practice, which has been most experienced to do good.

§. 16. THE Formulae are as follow:

1. TAKE *Peacock's Dung*, (whether of the Male or Female it matters not) dry'd, half an Ounce; *Salt of Carduus*, and prepared *Amber*, of each one Dram; *Syrup of Corn-Poppies*, three Ounces: mix and give the Quantity of a Walnut, Morning and Evening.

‘Evening.’ Or three times in a day let the following Infusion be given.

‘2. TAKE dry’d Peacock’s Dung, or the Dung of a House-Cat, two Ounces; Water of *Spanish Scorzonera*, or rather a Decoction of it made with Water, one Pint and a half: infuse them warm for one night, and sweeten the strained Liquor with Sugar for use.’

§. 17. Many Remedies are also to be obtained from the vegetable Kingdom; amongst which I most esteem the *Peruvian Bark*, and the Root of *Leopard’s Bane*, or *Doronicum*: for there is no need to enumerate many, since the Cure of a *Vertigo* is better effected by Medicines from the Mineral Kingdom, than from both the other. But I caution you, unless Necessity, and some particular Circumstance of the Patient requires it otherwise, not to give the *Peruvian Bark*, or Root of *Doronicum*, in any other Form (but in Substance and dry, or otherwise little Credit will be got by it: for those as well as many other Vegetables, communicate their Virtues to the Blood, when mix’d therewith in Substance, otherwise than as they do to any other Liquors out of the Laws of Circulation, (whether aqueous or vinous) as appears by daily Experience.

§. 18. LET therefore half a Dram two Scruples, or a whole Dram of the *Peruvian Bark*, be given twice or thrice in a day, with a Draught of the Decoction of *Scorzonera* made in

in Spring-Water; or given in an Electuary with a sufficient Quantity of Syrup of *Pionies*, or *Coral*, or especially *Corn-Poppies*, three or four times in a Day. Let the Form be,

‘ TAKE Root of *Doronicum*, and the
 ‘ *Peruvian* Bark powder’d, of each half an
 ‘ Ounce; Salt of Wormwood, one Dram;
 ‘ Syrup of *Corn-Poppies*, four Ounces: let
 ‘ the Patient take half an Ounce for a Dose,
 ‘ or six Drams, mixing with each Dose six or
 ‘ ten Drops of Liquid Landanum.’

§. 19. Practical Physicians direct Medicines which purge by Stool to be used with these at certain Distances; but (I speak from Experience) it is with less Success, and more to the Patient’s hazard: and therefore Catharticks are but sparingly to be used in this Distemper, but Emeticks more freely.

§. 20. LASTLY, and more efficaciously do Medicines from the Mineral Kingdom conduce in the Cure of this Disease; amongst which excel those made from Iron and Tin: But because now *Mars nostro servit in orbe*, we shall the rather draw some Assurances from thence for our Relief in this Calamity. With Success therefore may be given Iron in Substance or in Infusion; or the Chalybeat Syrup of *Willis*, made with Salt of Steel; or the artificial *Mars* of the same Person, that is soluble in Water, may be given to your Patient. The Syrup of Steel which *Willis* so much valued himself upon, is thus made:

‘ TAKE

‘ TAKE the Salt or Vitriol of Steel of *Willis*,
‘ two Drams ; dissolve it in four Ounces of
‘ Black Cherry Water : add to it half a Pound
‘ of Sugar, and let it but just boil to make it
‘ into a Syrup. A Spoonful is order’d Morn-
‘ ing and Evening, at the common medicinal
‘ Hours.’

§. 21. BUT the Salt or Vitriol of *Mars*,
according to *Willis*, is thus prepared :

‘ TAKE Oil of Vitriol, and Filings of
‘ Steel, of each equal Quantities ; after the
‘ Effervescence is over, pour upon it Spring-
‘ Water to stand above it the Height of three
‘ Finger’s Breadth : let them stand together
‘ hot in Sand for eight hours, or till the Wa-
‘ ter is impregnated with the Salt ; pour this
‘ off, and pour other again to the remaining
‘ Mass, until it cannot any longer, by the
‘ Taste, be perceived to have any thing from
‘ the Steel, but appears quite insipid ; then
‘ evaporate the Liquor till a Scum rises upon
‘ the Top, and it will shoot into Chrystals.
‘ This will yield as much Vitriol of *Mars* as
‘ will equal the Weight of the Filings and
‘ Oil of Vitriol first made use of, although
‘ some Part of the Filings will remain undif-
‘ solved.’

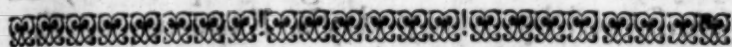
§. 22. IN the room of the forementioned
Syrup, two or three Ounces of the Chalybeat
Wine in the *London Dispensatory*, may be gi-
ven ; or Pills made with the Filings of Steel :
half a Scruple of the Steel may be order’d
for

for a Dose; or the Chalybeat Infusion may be prescribed, which we shall describe in the Cure of *Hypocondriacal Affections*.

§. 23. BUT in the Cure of a *Vertigo*, we ought above all things to avoid falling into that Error of *Etmuller*, of taking all *Vertigo's* to be sympathetical, and to affect the Brain and Sight by some Fault in the Stomach. For *Vertigo's* do not arise only from the Stomach loaden with flatulent Meats, that is, Meats subject to Rarefaction and Fermentation, as is plain to any one who considers the Causes before-recited; but very often a Detriment is done to the Stomach from a foregoing Fit, which will sometimes excite Vomiting in the most healthful Persons.

§. 24. BUT that Vomiting arises from a Fit of the *Vertigo* itself, is manifest, if before there was no Inclination to vomit; or only (and that most commonly happens) a Reaching to vomit: for both Vomiting and a Reaching to vomit, are occasion'd by the sudden and forcible Contraction or Convulsion of the Coats of the Stomach: And this is brought about by the Compression of the optick Nerves, and other Parts within the Brain, by the Filling or Extension of the Arteries; by which Compression there is less Quantity of Spirits derived into those Nerves, and by that means a greater Quantity into others, and especially into those which are carried

ried down to the carneous Coats of the Stomach.



CHAP. V.

Of an EPILEPSY and CONVULSION.

§. 1. **S**INCE an Epilepsy is a Convulsion, or a convulsive Motion of the whole Body, or of some of its Parts, with a Loss of Sense; the Nature of a Convulsion ought to be explained, before that of an Epilepsy can be rightly understood.

§. 2. A CONVULSION is an involuntary Contraction of a Muscle, and a constant Immobility of a Part; and this Effect is in a manner contrary to a Palsy: For as it has been remark'd, a Palsy happens as often as the Blood does not run freely into the Muscles of the Part that is to be moved, or that there is a Defect of animal Spirits in them, whereby their Inflation, and consequently Contraction does not succeed; so necessarily there must follow a violent and involuntary Contraction of the Muscles or Parts, if the Blood or nervous Fluid runs into them, with so great a Violence, that the Power of the Mind cannot restrain Contractions subsequent

quent thereunto without great Pain, which all Creatures avoid as much as possible.

§. 3. FOR it is a vulgar Proposition, and confirmed by every day's Experience, *That the Mind can direct a Quantity of Spirits greater than any other given Quantity, from what Cause soever derivable, into a Muscle having an Antagonist, by the Force of the Will frequently exercised.* And this ought always to be remember'd, *That great Pain will be excited in a Nerve, or any other sensible Part, if they be very much distracted by opposite Forces.*

§. 4. THE Causes of a Convulsion are now to be consider'd; (for its various Kinds, Signs, &c. are delivered by *Riverius.*) It has been an old Opinion, that the Cause of a Convulsion is any thing that produces a too much Repletion or Exinanition; which if rightly explain'd, may be the nearest the Truth. For if a greater Quantity of Blood or nervous Fluid enters into a Muscle, than into its Opposite, and that involuntarily, the Force impress'd thereby will be greater; and so there will be a greater Inflation and Contraction, and that too without the Direction of the Will, which is a Convulsion; but if into such a Muscle a lesser Quantity is deriv'd than into its Antagonist, there will be a Contraction of its Opposite, and on that side a Convulsion.

§. 5. BUT late Writers have found fault with this Opinion, only because they did not under-

understand it: And they have substituted in the room of this only an *Irritation* or *Vellication*; but that also may be referr'd to *Repletion*, because it has sufficiently already been shewn, and ought to be well fix'd in the Memory, That *by the means of Irritation or Vellication*, and those things which induce Pain, the Quantity of any derivable Fluid will be drawn into the Part affected, greater than what is natural; and thereby cause a *Repletion of the vellicated Part*.

§. 6. WHENCE it follows, that the Cause of Convulsions is twofold: *First*, Whatsoever empties, exhausts, or dries away the Body, or any of its Parts, and discharges those Fluids which are necessary for Nourishment, as too great a Flux of Blood, too much Purging, or too much Watching, and even whilst these happen without Pain; as also the precedent Causes of Fevers in adult Persons, and too much preceding Heat. *Secondly*, Whatsoever fills too much the Body, or any of its Parts; as all things which induce a *Plethora*, or are the Origin of Obstructions, and too much Moisture, as Feeding too heartily, Drunkenness, Anger, Hysterick and the Iliack Passions; and when the Blood is made so thick, that, altho it can rarefy in the Muscles, upon its Occursions with the animal Spirits; yet it cannot with equal Facility separate into the Nerves, and be driven into those Undulations which are requi-

requisite to Sensation; and lastly, all Wounds and all *Stimuli*, or things causing Inflammation.

§. 7. HENCE it follows, that every Convulsion is either from *Repletion* or *Exinanition*: and that this is the only useful Distinction, will also further appear from its Cure.

§. 8. AFTER we have thus briefly explain'd the Reason and Causes of a Convulsion, it will be easy to understand the Nature of an *Epilepsy*, which differs from a Convulsion only in this, that (besides its being accompanied with the Symptoms of a Convulsion) in an *Epilepsy* Sensation suddenly ceases, with a sudden Prostration of the Body, Gnashing of the Teeth, a suffocating Respiration, and involuntary Excretion of the Seed, Urine, and Excrements; towards the end of the Fit, Froth about the Mouth; and after the Fit is over, a Forgetfulness of all that happen'd therein: Yet this last is not always certain; for I have seen Epileptick Persons who have declared themselves sensible of a grievous Pain in the Head during the whole Fit: And one I knew, who, during the Fit, endeavour'd, tho' without being able, to repeat that Verse of *Juvenal*, concerning a Person whose Office it was to anoint the Sick, whensoever the same was done to himself.

§. 9. BUT the Rationale of those Symptoms wherein an Epilepsy differs from a Convulsion, is the same with that of the Symptoms of an Apoplexy, or rather a Vertigo; so that there is no necessity here of any repetition on that account.

§. 10. NOW the *Causes* of an Epilepsy, wherein they produce other Symptoms besides Convulsions, are Heaviness of the Head, Pain, Giddiness, much Sleep without any Benefit therefrom, Stupidity of Mind, a Dullness of the external Senses, Sadness, Heaviness of the Limbs, and a thin and undigested Urine. But by Causes I here understand what either alone, or from others on which they depend, induce those Symptoms.

§. 11. AN Epilepsy, as such, is very justly divided into *Idiopathick* and *Sympathetick*; in that the Fit comes of a sudden, without any Pre-apprehensions of the Patient; but in this there are always Forewarnings of the approaching Paroxysm.

§. 12. WE shall here enquire only after the Cure of the Idiopathick Epilepsy and Convulsion, excepting that alone which is from some Fault in the Stomach; because all the Kinds that are sympathetick, cannot but yield to the same Remedies as the other.

§. 13. BUT it is to be observed, that during the *Paroxysm* of an Epilepsy, the same Remedies ought to be made use of, which

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we before recited as proper for the Recovery of Apoplectick Patients to their Senses; since in this respect their Causes are the same: wherefore we shall hasten to the Cure of an Epilepsy after the *Paroxysm* is off, since that too agrees with the Cure of a Convulsion.

§. 14. WE have laid it down, that a Convulsion is either from Repletion or Exinanition; and we have recited the Causes proper to both: from whence may be obtained a manifest Solution of a Difficulty, concerning which Physicians are much divided; since some of them order Phlebotomy in Convulsions, and others blame it: for it is plain, that Phlebotomy is not to be prescribed to that kind which is from Exinanition; but it always ought to be order'd to those who are convuls'd from Repletion or Irritation, since Irritation is reducible to the same kind as Repletion.

§. 15. IT thence too is manifest, that neither Vomiting nor Purging is proper to that Species which is from Exinanition; so that to this Species those Remedies only seem to be advisable, which are commonly call'd *Specificks*. In the last place, after universal Evacuation in Convulsions from Repletion or Irritation, the Remedies hereafter to be described may be us'd, because they are equally suited to both Species of this Distemper.

§. 16. IN that Convulsion therefore which has its Cause from Repletion or Irritation,

a Vein is first to be open'd; and if a *Plethora*, a Debauch, or the like, have had any share in the Cause, or if the Paroxysm is long protracted, Blood is to be drawn away in the very Paroxysm itself.

§. 17. THENCE we should proceed to Vomiting. And Vomits are most suited to that Convulsion and Epilepsy which is sympathetick from the Stomach or Womb. And I indeed prefer Antimonials to all other Emeticks, and to the rest of Antimonials, an Infusion of *Crocus Metallorum* in *Canary*. This Infusion ought to be exhibited after Phlebotomy, and the Paroxysm is over; and not once only, but oftner, and especially if the Epilepsy and Convulsion is obstinate, and recurs every Month: when an Emetick ought to be given a few Days before the next Fit is expected.

§. 18. ANY Quantity of the *Crocus Metallorum*, however great, may be infus'd in a given Quantity of Wine, so that it is not too much for the Nature of an Infusion. And since the Disposition to vomit is not the same in all, nor have all the same Strength to bear it; therefore after two Emeticks, it may be proper sometimes to have recourse to Catharticks.

§. 19. AND if there are any Signs of a viscid Blood, and an Infarction of the Vessels, and Excess of Living has preceded the Distemper; or if the Convulsion be sympathetick, from Hypochondriacal Affections, and

especially where the Bowels are costive, then to the Catharticks *Mercurius Dulcis* ought to be added. And in such Cases seven or nine Grains may be mix'd with half a Dram or two Scruples of *Pil Cochia*, or any of those Pills mentioned as useful in a Palsy. It is likewise to be observed, that Epileptick Persons are hard to work upon, and therefore that they require the stronger Doses.

§. 20. A F T E R due Purging is comply'd with, then a Sudorifick Diet-Drink should be directed, with a Decoction of the Wood and Bark of *Guaiacum*, especially if a Diminution of Transpiration has been at all concerned in producing the Disease; or if there are any Signs of a viscid Blood, or there appears a Stupidity of Understanding or of Sensation: But such a Stupidity or Dulness ought to be what precedes the Paroxysm; for all Persons are render'd so afterwards by an Epileptick Fit.

§. 21. A N D the Decoctions of the *Guaiacum* Wood, and especially of its Bark, do also much contribute in the Cure of that sort of Convulsion, that is from Irritation, or an Acrimony of the animal Fluid. For it is manifest by many Experiments, that most grievous Pains have been reliev'd by the *Guaiacum* steep'd and boil'd in Spring-Water, that is six Ounces of *Guaiacum* macerated eighteen hours in twelve Pints of Water, over a slow Fire, and in a close Vessel; and after

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a Decoction ten Pints only are to remain; to which are to be added stoned Raisins, or rather Liquorice. They are indiscreetly officious, who pretend to add Specificks to this Decoction, and answer no other end but to make it nauseous to the Patients; for this ought to be us'd as common Drink.

§. 22. AND at last we come to that Part of the Cure which respects only Convulsions from Exinanition, and is applicable to both Species of a Convulsion and an Epilepsy, and therefore of course proper likewise to a Convulsion arising from Repletion; but always premising, in order to make the Cure more safe, such Universals as have before been described: And therefore in the Intervals, between the Paroxysms, may conveniently be given such Powders as the following.

‘ 1. TAKE Powder of wild Valerian Root, half a Dram; *Peruvian* Bark, a Scruple; Amber prepared, half a Scruple: and mix for one Dose, which may be given three times in a Day at medicinal Hours.’ Or,

‘ 2. TAKE of human Skull, and Elk’s Claws, both powder’d, each one Scruple; volatile Salt of Amber, seven Grains: mix for one Dose.’ Or,

‘ 3. TAKE Earthworms washed, and dried by the Fire, or Sun, and powder’d, one Scruple; which given two or three times in a day, is outdone but by few things.’

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‘ 4. TAKE

‘ 4. TAKE Root of *Virginia-Snake-Weed*,
 ‘ one Scruple; wild *Valerian Root*, thirty five
 ‘ Grains; red *Coral* prepared, twelve Grains:
 ‘ mix for a Dose, which may be given at the
 ‘ same hours two or three times in a day, with
 ‘ the Syrup of the *Arabian Stæchas*.’

IN the room of the *Stæchas* or *Piony-Sy-*
 rup, for a Vehicle, the Powder may also be
 taken in the following Mixture:

‘ TAKE of *Black-Cherry-Water*, two
 ‘ Ounces; *Mint-Water*, one Ounce; *Trea-*
 ‘ cle-Water, half an Ounce; Tincture of
 ‘ *Castor*, one Dram and a half; Syrup of
 ‘ *Corn-Poppies*, six Drams: mix.’

§. 23. WHAT Physicians write concern-
 ing the special Virtues of human Blood, and
 its Spirit in preference to any other urinous
 Spirit against this Disease, are only the Dreams
 of credulous Persons; and therefore we shall
 lay no stress upon such Remedies, any more
 than other volatile Spirits, which are not a-
 lone able to remove this Distemper.

§. 24. BUT it is to be remarked, since we
 are now speaking of Powders, that the *Epi-*
 lepsies of Infants, all which are from *Reple-*
 tion, are, for the most part, to be cured by
 th genuine volatile *Salt of Amber*.

§. 25. INSTEAD of Powders, may be
 conveniently exhibited the following Elec-
 tuary:

‘ TAKE wild *Valerian Root* powder’d,
 ‘ one Ounce; *Fraxinel*, half an Ounce; Gum
 ‘ *Assa-*

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‘ Assafetida, two Drams ; volatile Salt of Am-
‘ ber, half a Dram ; Venice-Treacle, half an
‘ Ounce ; Syrup of Pionies, a sufficient Quan-
‘ tity to make them into an Electuary.’ of
which the Patient may take the Quantity of
a Nutmeg, or of a Walnut, two or three
times in a day.

§. 26. BUT the *Cinnabar of Antimony* is in
this case of the greatest note ; which ought to
be sublimed at least six times before it is used ;
its Dose is from four Grains to half a Scruple,
or a Scruple, according to the Strength of the
Patient. And if this is rightly prepared, it
may be mixed with Powders or Electua-
ries, or given alone in *Conserve of Rosemary-
Flowers*.

§. 27. BUT if the Disease is like to run
out into a considerable Length, the following
Pills may be order’d once or twice every Day
for a Month together.

‘ 1. TAKE Castor from *Russia*, and Gum
‘ Ammoniacum, of each seven Grains ; Tinc-
‘ ture of Castor, a sufficient Quantity to make
‘ them into Pills of a middling size : three of
‘ which may be given for a Dose.’ Or,

‘ 2. TAKE *Russian* Castor, and Gum Am-
‘ moniacum, of each seven Grains ; wild Va-
‘ lerian Root, half a Scruple ; Salt of Mistletoe
‘ of the Oak, or of Fraxinel, or of Tartar, se-
‘ ven Grains ; Tincture of Castor, a suffi-
‘ cient Quantity to make into a Mass for
‘ seven Pills : which may be given at one Dose.’

§. 28. CATHARTICKS may be interposed once in seven Days; and sometimes instead of the *Castor* and *Gum Ammoniacum*, the Filings of Steel may be used to advantage.

§. 29. BUT if nothing of this kind does good, let the Patient be sent to the warm Baths; but of what sort, all do not well agree. As for my own part, I prefer those in which a Salt is found approaching to the Nitre of the Antients, or analogous to the Salt of Tartar; such as is that of *Bourbon* in *France*, some of the *Spaws*, and the *Moffet* amongst the *Scots*: For it is certain, that the Drinking of such must easily open the Body, and by that means remove Repletion; and these do with much more Safety, and more lastingly than any Opiates whatsoever, assuage those Pains that arise from Catharticks long retained in the Body; and both by their Quantity, and the Force of their Salts, break away the Infarctions of the Vessels.

§. 30. IT is better to try all these Remedies, than have recourse to the last, which is by Salivation with Mercury; which, notwithstanding it is ranked in the last place to some of the tenderest Patients at least, yet it is not put in the last place as a Remedy of little value.

§. 31. FOR it is known that *Mercurius Dulcis* inwardly taken, will remove the most obstinate Obstructions, and make an Evacuation

tion of that ferous Matter which causes Repletion, that cannot be done by any Sudorifics whatsoever, or by what operates upwards or downwards. And lastly, the most grievous Acidities, and most raging Pains, and the Causes of Irritation, may be conquer'd and assuaged by the Use of Mercury.

§. 32. BUT let it be observed, that after Salivation you must always have recourse to Catharticks, and from Catharticks to Sudorifick Decoctions of the Wood and Bark of *Guaiacum*.

§. 33. BUT if the Patients are Females, or Men of a more delicate Frame, and finer Texture, or inclinable to the Phtisick, and Salivation has been comply'd with as the last Refuge in this Case; then the Decoctions of Sarsa in Spring-Water will confirm the Patient in Health. It ought to be given in the Morning warm, that they may sweat, to the Quantity of half a Pint, and drank cold all the rest of the Day as ordinary Drink.

§. 34. AND at last let it be remarked, that the Medicines prescribed in the *Vertigo* have also a place here, by reason these Distempers have an Affinity with one another,



C H A P. VI.

Of MADNESS.

§. 1. **M**ADNESS is a *Delirium without a Fever, attended with Boldness and Passion*: whence it is necessary that we should also explain what is a *Delirium*. To which purpose it is therefore proper to observe, that as often as the Species of things wherewith we have been acquainted, are hurried together, we may be said to dream; and thence in Sleep they are added with other things, and variously compounded, from the various Repercussions of the animal Spirits, which arise from the Cause producing Sleep, and pressing the Nerves, so as to revert the Fluctuation of their Juice. A *Delirium* therefore is the *Dreams of waking Persons, wherein Ideas are excited without Order or Coherence, and the animal Spirits are drove into irregular Fluctuations*.

§. 2. IF therefore the Cause inducing a *Delirium* be of that nature, that it can excite Ideas or Motions of a lively and considerable *Impetus*, without any manner of Certainty or Order; such a *Delirium* will be attended with Boldness and Rage, and violent Motions of the Body; or a *Madness* will be produc'd.

§. 3.

§. 3. ALL the antecedent Causes of Madness are whatsoever occasion a continual Pain in the Head, too much Watching, Anxiety of Mind, frequent Passion, and uncommon Proclivity to Venery, a Cessation of usual Evacuations; all which the sooner concur in causing this Distemper in a hot Summer, and especially if Persons drink too much of hot Liquors.

§. 4. BUT it is plain, that all these give a greater Disposition to the Blood for Motion, and render it fluxile, but not consistent and thick enough; and therefore that they dispose likewise Persons to *continued Fevers*: since those, or their Causes, occasion the Blood to be thrown out of the Heart with an increased *Impetus*, unless some other Cause intervenes, whereby the Efficacies of these are interrupted in disposing the Blood into such Motions as accompany continued Fevers.

§. 5. AND the Blood is disposed to those febrile Motions, as often as it can be rarefy'd into its minutest Parts; that is, so uniformly rarefy'd, that it can easily with any Force, by the Motion received from the Heart, go into Parts divisible at the Occurrences of those Orifices into which it ought to be distributed: for then the Cohesion of the Parts, which in this Case can be but very small, will not be any Obstruction to the Increase and Propagation of the Blood's Velocity. But if it happens, that the efficient Cause (or the Heart) throws

throws the Blood with a greater Force, or that the Blood can the more easily be propelled in any given time; it will occasion at the same time, that some Parts of the Blood be more nearly united, so as to form *Molecularæ*, consisting of cohering Particles; which *Molecularæ* will cohere to one another, and not so easily obey the Direction of the Heart's propelling Force. The Blood hereupon cannot be uniformly rarefy'd, nor enter so easily into the very small Orifices of the Vessels, and so soon travel through them; and therefore there will no Fever arise, but a *Delirium* without a Fever, wherein the Heat of the Blood will be greater, and the Pressure in the Brain uncertain: whence uncertain Recursions of the Spirits, inordinate Undulations, confused Vibrations of the Nerves, and a remarkable Energy of Imagination; whence will proceed Audacity and Passion beyond measure.

§. 6. FROM hence it is manifest what we ought to determine concerning the Opinion of *Willis*, who placed Madness in a Change of the animal Spirits into the Nature of an *Aqua Stygia*, that is a Spirit of Sulphur or Nitre; for this is altogether impossible to be in any living Man: and it does not likewise accord with the Nature of Madness; for an Activity of Spirits, and a Vehemence of Motion, ought not from thence to arise, but on the contrary a Privation of all those, that is, a Coagulation in the whole Mass of Blood: from whence

whence both Sense and Motion would suddenly cease thro all the Parts of the Body, and the Heart itself; or there would follow a deadly Syncope, or a suffocating Catarrh, and not a Madness. But let us turn towards the Cure.

§. 7. IN which, first of all, if it be practicable, some Blood must be taken away, and in a large Quantity: then some of the stronger Vomits are to be exhibited; as for example, from four to seven Grains of *Mercurius Vita*, and sometimes more. And altho this Medicine may in these Cases be given in very large Quantities, it sometimes will not excite Vomiting, but only work by Stool.

§. 8. THEY who give Opiates to Maniacs before Blood-letting and Purging, will often make the Distemper more obstinate and durable; since it is known that many by the Use of *Opium* alone have fallen into *Deliria*.

§. 9. THEREFORE Vomiting, and Purging downwards particularly, are to be premised, besides Phlebotomy; which being done, the following Laxative Ptisan may be directed for finishing the Cure: by the help of which, a Person of eminent Birth was relieved from this Malady.

‘ TAKE Tamarinds, two Ounces; boil them
 ‘ gently in three Pints of clear Water to two
 ‘ Pints, in which infuse warm a whole night
 ‘ three Drams of Sena Leaves; one Dram of
 ‘ black Hellebore Root; Cinnamon and Gin-
 ‘ ger,

ger, half a Dram : when it is strain'd and cold, let it be the Patient's common Drink.'

§. 10. OR let the *Hellebore-Apple* be used, that is, an Apple in which has been stuck two Scruples of the Root of *Black Hellebore*, with some Cloves, and so roasted in the Ashes; and when the Roots are pick'd out, to be eat.

§. 11. OR the Extract of *Hellebore*, may be given; which is made by infusing the Roots of *Black Hellebore* in Spring-Water, with Salt of Tartar in an open Vessel; then the Liquor is to be strained, and when a little evaporated, a Dram may be used for a Dose; but when quite hardened into an Extract, a Scruple is enough.

§. 12. OR this Powder may be given :

TAKE the Leaves of black *Hellebore*, and Sugar, powder'd, of each half a Dram; Ginger, half a Scruple; mix for a Dose.

§. 13. AFTER purging with these and the like Forms, it will be of service to let the Patient frequently drink of cold Water, with two or three Grains of *Saccharum Saturni* in it.

§. 14. AND all these being comply'd with, Medicines with *Opium* may be safely ventured upon. And first of all, such an Emulsion as follows.

TAKE of the four cold Seeds, each one Dram; white Poppy Seeds, two Drams; after

‘ after they are bruised, pour upon them
 ‘ half a Pint of Spring Water; in which dis-
 ‘ solve of *Laudanum Opiatum*, two Grains;
 ‘ Syrup of Diacodium, one Ounce; let it not
 ‘ be given all at once, but part of it at certain
 ‘ distances, and often.’

§. 15. IN the mean time Cupping-Glasses
 may be apply’d to the Shoulders and hinder
 Part of the Head, both with and without
 Scarification; and let almost the whole Body
 be immersed in a Bath of warm or cold Wa-
 ter, as best agrees with the Temperature of
 the Season.

§. 16. THIS last Remedy, as here di-
 rected, stands recommended by almost all
 practical Physicians, and we have known it
 made use of to good purpose; but if not only
 almost the whole Body, but quite the whole
 Body was thus to be immers’d, so that it re-
 main not in too long, it would, I doubt not, be
 a very efficacious means of Cure beyond any
 other, by reason of a great Pressure of all
 the Parts of the Body and Blood, from the
 Weight of the ambient Fluid; whence would
 arise a *critical Fever*, or a Solution of the Dis-
 ease without a *Fever*, either by Urine or Sweat.

§. 17. BUT observe, that these and the like
 Remedies, are not once, but often to be admi-
 nistred to Maniacks; for a Physician has less
 reason to be ashamed of such means, than the
 Castration of a Patient, by which some have
 boasted

boasted they have restor'd Maniacks to (a shameful) Health.

Of Melancholy, or a melancholy Delirium.

§. 18. TO the Cure of a *Mania*, we shall adjoin that of *Melancholy*, or a *melancholy Delirium*, which differs from a *maniacal Delirium* in this only, that in *Melancholy Fear* and *Sadness* supply the Places of *Audacity* and *Passion*. To *Melancholy* therefore concur such Causes as excite Species less vivid, and of a lesser *Impetus*. To remove which,

§. 19. WE must not be so free with Blood-letting, and be likewise cautious of Purging, unless very gently. But *Emeticks* are first of all to be given; that is, such as do not operate too much with Persons unaccustomed and unfit for brisk Motion, such as are melancholy Persons.

§. 20. AFTER Vomiting, whatsoever is impregnated with Steel is of service: And if the Patient drinks Whey for a constancy, especially made with Goat's Milk, and sometimes impregnated with the opening Roots and gentle Diureticks, it will do more service than the taking many compound Medicines.

§. 21. BUT altho we have said that the Blood is but sparingly to be taken away, yet we would not have Phlebotomy quite omitted; for it generally is of service to melancholy Persons to have the Hæmorrhoids.

§. 22.

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§. 22. AND because to melancholy Persons especially, it is agreeable to change their Drink pretty often, sometimes Wine will be of advantage; and what is yet more beneficial than the Use of Wine, will be the familiar Conversation of Persons of Gayety and Wit; Riding with Friends in a clear Air; and other convenient Exercises of the Body. For all these things will restore those vivid Motions, from whose Defect the Melancholy at first proceeded.

BUT to both, that is, *Maniacks* and *Melancholy Persons*, a moistning Diet is convenient; which serves, for instance, to dissolve those *Moleculæ*, which, by the preternatural and unusual Cohesion of their Parts, stifle the uniform Rarefaction of the Blood, and its equable Distribution thro the Vessels.

C H A P. VII.

Of the HEAD-ACH.

§. 1. IT is commonly laid down by Physicians, that Pain is a *Solution of Continuity*, but not with sufficient Accuracy: For Pain is the *Sense of a more violent and sudden Solution of Continuity made in the Nerves, Membranes, Canals, and Muscles.*

§. 2. THE Causes therefore of Pain may be all such things as are able to distract the Parts of the Nerves and Membranes from one another. But there is nothing in the compass of Nature which cannot do that, with whatsoever Properties or Figures it is endu'd. For since somewhat may always be applied or added to another Body, such a Body may increase into a Bulk too big to flow thro a Canal of a given Diameter, and which will therefore require more room. Wherefore whilst the sides of a Canal are thrust outward, beyond what they are us'd to be, that is, the Parts composing those sides, before contiguous, being loosen'd and mov'd away from one another; if that Body strikes into those Sides with a brisk *Impetus*, and that *Impetus* is continually renewed, the Solution will be considerable, or the *Nisus* towards a Solution violent, or there will arise Pain.

§. 3. WHEREFORE the constituent Parts of Fluids being sufficiently augmented in Dimension, and propell'd with a continually repeated *Impetus* against any Canal of our Body, may occasion that considerable Solution, in which consists the Origin of Pain.

§. 4. FOR it all comes to the same, whether some Parts are added to a Body, or the Parts of that Body are, by any Cause whatsoever, separated to so great an Interval, towards the Sides of a Canal, as to constitute

a Dimension equal to that which arose from the Addition of a new Part: for both ways the Bulk may so far increase, that the natural Capacity of the Canal is not big enough to contain it, without some violent Dilatation; and (by means of a strong and frequently repeated Contraction of the Heart) a Distraction of the Fibres constituting their Coats, and consequently Pain must follow.

§. 5. FURTHER, as there may be always somewhat added to any other Body (at least whilst comprehended within our Canals) so from any Body may also somewhat be taken away; since every Body is divisible *in infinitum*, or at least so far divisible as to become less than the Capacities of the Pores which are interspers'd between the Fibres composing those Canals; for those Fibres are not so close or contiguous to one another, as to leave no Interstices between them. But a Body so diminish'd in Dimension, and impell'd with a considerable *Impetus*, and striking against the Sides of the Canals easily, and with a rapid Force, breaks into the Interstices of those Fibres, if it be less than the Capacity of such Interstices, and moved obliquely; because the Superficies of the Fibres are not wont to be contained under geometrically right Lines, but to have Particles standing out and prominent; and these it divides from one another.

§. 6. AND thus any Body, of whatsoever Figure, may occasion in us Pain, so that it be big enough to distend the Vessels beyond their wonted Measure, or small enough to enter the Pores in the Sides of a Canal, with an *Impetus* in the manner already intimated.

§. 7. BUT what we have here advanc'd with relation to things within the Vessels, may be apply'd, and that very easily, to others out of the Vessels. We therefore address ourselves to the Cure of that *Head-ach* which is *Idiopathick*, since the Cure of a *Symptherick* depends upon the Cure of other Diseases; concerning which, consult *Riverius*.

§. 8. PRACTICAL Physicians vex themselves after a strange manner, in endeavouring to arrive at a distinct Method of Cure in this Distemper; and yet they confound both themselves and their Pupils thereby. We pronounce that Phlebotomy is suitable to every kind of Head-ach, and that in the Jugular Vein, so far as the Patient's Strength will admit of. For after this is perform'd, the *Impetus* and *Nisus* of the Parts of Blood will be lessened against that Body which it strikes, whether it be gross or minute, or whether it forces against the Sides of a Canal, or strikes against the Sides of the Pores in their Coats.

§. 9. AND in this respect it is manifest, that Vomiting is always serviceable herein,

as it prevents at least a Continuation of the Pain, from the Parts of the Food indigested in the Stomach, and by that means likely to render the Blood more gross.

§. 10. AFTERWARDS Blisters ought to be apply'd to the Neck; and Issues are also useful, always observing to keep the Bowels open and laxative.

§. 11. THESE things being done, whether the Blood is thin or thick, or (as Physicians are wont to express it) whether the Pain is from a Cause cold or hot, yet the sudorifick Decoctions from *Guaiacum*, *Sassafras*, and the like, are necessary. For these attenuate the thick parts of the Blood, and divide them so, that they are fitted to pass thro any Canals of the Body; and the minute Parts of too thin a Blood that strike into the Fibres, these expel by a *Diaphoresis*.

§. 12. AND therefore you see, that in our Explanation and Cure of this Disease, there is no regard had to that *Acid*, so much accounted of by some, and by us here [*viz.* in *Holland*] in particular, Because it is manifest from the foregoing, that the Shape of the morbidick Matter has no Influence herein, nor that it signifies any thing of what Figure or Texture the Matter is, so that it be either bulky enough, or minute enough, under those Circumstances already observed.

§. 13. LASTLY, Opiates and Narcoticks are here to be added, which are yet not immediately

diately to be made use of before a Course of these Universals. Opiates may be most conveniently added to Emulsions: as for Example;

‘ TAKE of white Poppy Seeds, two
‘ Drams; of Sweet Almonds, number ten;
‘ Camomile-Flower Water, a Pint and a
‘ half; white Sugar, one Ounce and a half;
‘ Opium, one Grain and a half, or two
‘ or three Grains. Make into an Emul-
‘ sion.’

§. 14. THESE Emulsions are not to be drank all at once, but at several times: and the Effects of the Dose first given is to be waited for, before the Repetition of another. Or one Grain or more of *Laudanum* may be dissolved in half an Ounce of *Cinnamon* or *Treacle-water*; and to that may be added *Camomile-Flower Water*, or the *Water of Corn-Poppies*, with *Venice-Treacle* and *Tincture of Castor*, of each half a Dram; for this Mixture given by Spoonfuls, will remove the Pain. But outwardly may be us’d, to good advantage, the *aromatick Spirit of Sal Armoniack*, or *Sal Volatile Oleosum*, as much as you please, sprinkled upon Stoupes covered with the White of an Egg, and impregnated with *Camphire*.

§. 15. BUT always be aware, that an inveterate Pain of the Head, and which seems to be *Idiopathick*, does frequently arise from a venereal Infection, not thorowly eradicated: where it is to be diligently examin’d,

wher-

whether the Patient has not before been in that pickle: and this Suspicion ought by so much the more to be heightned, by how much the more difficultly this Disease gives way to ordinary Medicines, without those which are *antivenereal*. For the Cure of a Pox in these Northern Climes is not so happily conquer'd without a Course of *Mercurials*.

C H A P. VIII.

Of a CATARRH.

§. 1. **A** CATARRH is an unwonted De-
fluxion of Serum from the Glands a-
bout the Head and Mouth.

§. 2. THE Causes are whatsoever accumu-
late too great a Quantity of Serum in the Bo-
dy; whatsoever hinders the Discharges by U-
rine, and the Pores of the Skin; too much
liquify the Blood; astringe the Bowels be-
yond measure; or weaken the Digestion at
the Stomach.

§. 3. FOR tho indeed the Food is chang'd
into a sort of Fluid, notwithstanding that Di-
gestion is weaken'd; yet since its Commintion
is not great enough for the Chyle, which is made
of it, to compose with the Blood an homogene-
ous Fluid, it will be easily again separated from
it into Parts, where its Velocity impressed

from the Heart (by the means of which it is first mix'd with the Blood) grows languid; that is, in the Glands situate about the Head, which are numerous enough to separate a great quantity of *Serum* thro them.

§. 4. AND indeed from what Cause soever the *Serum* is accumulated in the Vessels beyond its wonted Quantity, its greatest Part cannot but, after some Circulations, lodge it self about the Head or Brain; because that is furnished with the least Resistances, either to oppose it, or to throw it off after Lodgement: and upon that account the Brain itself will seem to be in fault, whenever the Blood or other Humours are so.

§. 5. FROM hence it is manifest what a Catarrh is: in order to the Cure of which, if the Strength will bear it, it will be expedient to give an *Emetick*, especially in the beginning; or the stronger *Catharticks*, and such as are called *Hydragogues*: for unless there be danger of an *Asthma*, there is no occasion for *Phlebotomy*.

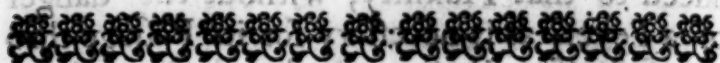
§. 6. I SAY that Vomiting, or strongly Purging, is preferable to all other Remedies; for the Matter of a Catarrh is neither so safely, nor so expeditiously discharged by Sweat: for, whether its Accumulation is occasion'd by some Fault in the Concoction of the Stomach, or from an obstructed Transpiration; and howsoever hot, or thin, it may seem to be, it is yet too thick and viscid to be easily reduced

duced to that Fluxility, without the danger of a Fever, as is necessary for its Passage thro the sudorifick Ducts. And daily Experience instructs the practical Physician, how difficult it is to bring those Patients into a Sweat, who are afflicted with a severe Catarrh.

§. 7. WHEREFORE after Emeticks, make use of strong Catharticks; amongst which I esteem the Juice of common *Orrice*, to be given to the Quantity of an Ounce, with an Ounce or an Ounce and a half of Syrup of *Buckthorn*, or *Manna*: for with this Juice there ought to be something always given that is qualifying. Potions also may be given with the Infusion of three Drams or more of *Sena*, to the strained Liquor being added the like Quantity of *Electuary of Roses*, and half a Dram of the *Edinburgh Extract*, or of the *Catholick Extract*, with one Grain of *Elaterium*.

§. 8. IN the mean time Vesicatories may be applied to the Neck and Arms; and after these are also over, Sudorificks may be ventured upon, with the Use of which and Purging carefully between whiles, the Distemper may be conquered: For Catharticks ought always to be interspersed with Sudorificks.





C H A P. IX.

Of an OPTHALMY.

§. 1. **A**N Opthalmy is an Inflammation of the Tunica Adnata of the Eye, which is accompanied with Redness, Heat, Pain, and Swelling: For an Inflammation arises from the Blood stagnating in the Capillary Arteries.

§. 2. **T**HERE will be no occasion of enumerating the Causes of an Opthalmy, since they are in common with all other Inflammations; and which we shall be particular about, when we come to treat of the Inflammation of the Lungs and Pleura.

§. 3. **B**UT this I would have diligently to be observed, that there ought a Distinction to be made between an *external* Opthalmy, and that which is at the same time both *external* and *internal*. The *External* we have described. The *Internal* is an Inflammation of the *Retina*, which no one, as I remember, has described; nor has any one of those who have handed down to us the Rules of Practice, delivered the Signs by which this is to be known: I shall therefore give you one inseparable Mark of Distinction, that may be of

the

the utmost Service in Practice: for if the Signs of an external Opthalmy appear, that is to say, Redness, Heat and Pain, and nothing else is to be seen, it is an external Opthalmy only; but if besides the Signs of an external Opthalmy, there seems to the Patient himself as if some Moats were floating about in the Air, and a kind of obscure Dust flying, or uncertain Appearances of Objects, then there will be an *internal Opthalmy*, in conjunction with an *external*, if there be also the Signs of that present. The reason of this shall be explained, when we come to discourse of a *Gutta Serena*, and a *Suffusion*.

§. 4. BUT because we have shewn how a stagnating Blood does always indicate Phlebotomy, Blood ought without delay to be taken away in an Opthalmy. And if it be external only, once or twice, according to the Strength of the Patient, may suffice; but if there are Signs of an internal one, it ought to be repeated oftner: and both Reason and Experience convince us, it may be done with Safety. Nor is there indeed any one Disease, which, according to its nature, does more often require Blood-letting than an Opthalmy does.

§. 5. AFTER Bleeding plentifully, it is necessary to have recourse to Catharticks; but Emeticks are always to be avoided in Distempers of the Eyes, if any regard is to be had to Antiquity: therefore on that account neither are those Catharticks to be made use of, which

which are sometimes accustom'd to provoke Vomiting in their Operations, as the Antients have also informed. But these Fathers in Medicine have not taught us how to reconcile this Precept with their, and others, daily Practice, in prescribing Vomits in Catarrhs (which affect the Eyes) and almost all Diseases of the Head (which also are troublesome to the Eyes) and more especially when an Opthalmy accompanies the Small-Pox: For it is manifest, that the Small-Pox is attended with a Viscidity of Blood, which occasions it to stagnate in the capillary Arteries, and to produce Pain in the Back, a Pulsation of the Forehead and Temples, with an Itching of the Eyes, Redness in the Face, and Difficulty of Breathing, all which, as hath been before demonstrated, arise from Viscidity.

§. 6. TO conquer this Viscidity therefore, and an Opthalmy depending thereupon, we must make use of strong Catharticks, and that not once only; as also other Remedies, whether external or internal, are to be used between the Purgings. And to these Catharticks, exhibited in Pills especially, may be added *Mercurius Dulcis*, for many Reasons; amongst which this is not the least, because an Opthalmy is wont to be accompanied or join'd with a strumous Affection of the Eyes, even when there appear not any other Symptoms of a *Struma* in the whole Body, so as to give any manner of Suspicion thereof. And if

Struma

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Struma are join'd with an Opthalmy, then it will not give way to any ordinary Medicines, either internal or external.

§. 7. AND therefore if an Opthalmy does not yield to these Remedies, the Case must be strumous, or it will be a *strumous Opthalmy*; and in this Circumstance *Mercurius Dulcis* is the only Remedy.

§. 8. WHEREFORE in every Opthalmy, whether external or internal, and more especially in every internal inveterate one, the Patient must be purged with Pills; which may be made after this manner:

1. TAKE of the Agarick Pill, or Pill
' *ex duobus*, half a Dram; *Mercurius Dulcis*,
' eight Grains; and with two Drops of Oil of
' Cloves, make them into seven Pills for one
' Dose.' Or,

2. TAKE Pill of *Rudius*, Resin of Jalap,
' and *Mercurius Dulcis*, of each half a Scruple;
' Oil of Cinnamon, one Drop; Syrup
' of Buckthorn, a sufficient Quantity to make
' into Pills for one Dose.'

§. 9. OR a Purge may be given with a Decoction of *Sena* and *Tamarinds*; to which may be added Syrup of Buckthorn, which is of excellent Service in this Disorder: or in case of its not being ready, a third Part of the same Quantity of *Electuary of Roses* may supply its stead. But if there can be any reason for not giving *Mercury*, then in its room

let

let *Diagridium* be freely exhibited in the same Pills.

§. 10. IN the mean time *Vesicatories* are to be apply'd to the Nape of the Neck; and care is to be taken that for many days together they do not skin over: and when they cease running, a *Seaton* must be made, if possible, or *Issues* at least. It can be hardly express'd what wonderful Service both *Vesicatories* and *Seatons* will do in this case, and therefore a Compliance with them is peremptorily to be insisted on.

§. 11. THESE things being done, and even whilst they are doing, the expressed Juice of *Millepedes* ought to be given inwardly, (as for example, of five and twenty for one Dose) infused cold for a whole Night in three or four Ounces of Ale, or *Rhenish* Wine, or white *French* Wine; to the strain'd Liqueur adding some Sugar, to be drank in a morning, and repeated every day, when Catharticks are not given.

§. 12. IF it is apprehended that the Distemper will be protracted into Length, a *Millepedes-Drink* may be contrived as follows:

‘ TAKE of the Leaves of Eye-bright,
 ‘ four Handfuls; sweet Fennel-Seeds, and
 ‘ Flowers of Melilot, of each two Drams;
 ‘ live Millepedes, number two hundred; of
 ‘ fermenting Ale, twenty four Pints: after
 ‘ the working is over, let it be used for common Drink.’

§. 13. AFTER Universals it may be of advantage to administer Externals that will dissolve the stagnant Humours; wherefore Fomentations and *Collyria* ought to be prescribed, such as the Decoctions of Camomile, and red Roses, in Spring-Water: to which may be added, as for example, to four Ounces of such a Decoction, half a Dram of the *white Troches* of *Rhasis* without *Opium*.

BUT since we have now chiefly under Consideration the internal Opthalmy, in which external Medicines avail but little, we shall defer their Descriptions; because their Use will be more wanted in an *Epiphora*, to which we now hasten.

CHAP. X.

Of an EPIPHORA.

§. 1. **A**N Epiphora is an Affection of the Tunica-Adnata, into which, and the Angles of the Eyes, the arterial Blood being crowded and dilating the Glands there situated, with its over Quantity, as in the manner Tears are produced, constitutes that Species of a Catarrh, which is thus called.

§. 2. ITS Causes are in common with those of a Catarrh, and the Method of Cure the same with respect to Universals or Internals.

But

But as the Use of the Eye is to us the most necessary, and the most excellent Office of it that which is performed by the *Cornea*; it is requisite we make use of all Helps against such a Catarrh, which by its Corrosion and *Len- tor* destroys the Transparency of the *Cornea*. For these Reasons we shall likewise mention such Externals as may seem most efficacious: and these we shall direct against that particular kind of *Epiphora* which is attended with a sharper *Serum*; since the Cure of this must also be efficacious to that sort which is attended with a milder one.

§. 3. AND, first of all, to blunt the Acrimony, and to constringe the Glands, from which the *Serum* ouzes out, a Decoction of *Mallow-Leaves*, *Marshmallows*, *Pomegranate-Bark*, *white Poppy-Heads*, *Flowers of Melilot*, *Balaustines*, *Fænugreek-Seeds*, made with common Water, would be of service; into which dip a thin Cloth, and put it to the Eye. Or the following *Collyrium* may be made use of:

‘ TAKE of Rose and Fennel-Water, each
‘ two Ounces, Emetick Wine made by the
‘ Infusion of *Crocus Metallorum*, half a Dram;
‘ Pearls prepared, two Scruples; white Vi-
‘ triol, half a Scruple: mix; and to it may
‘ be added half a Dram of the white Troches
‘ of *Rhasis*, without *Opium*.’

§. 4. OR let the following *Collyrium* be often dropped into the Eyes: *Viz.*

‘ TAKE

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‘ TAKE the Water of Eye-bright, and
‘ of Camomile-Flowers, each two Ounces;
‘ Tutty prepared, half a Dram; Sugar of
‘ Lead, nine Grains: mix.’ Or,

‘ TAKE Plantain-Water (or rather a
‘ Decoction made of it with Spring-Water)
‘ three Ounces; Camomile-Flower-Water,
‘ one Ounce; Mucilage of Flee-wort-Seed,
‘ and Rose-Water, two Drams; white Vitriol,
‘ half a Scruple: mix for a *Collyrium*.’

§. 5. IN the mean time let the Corners of
the Eye be frequently touched with a little of
the following Ointment, which I affirm to be
an excellent Medicine.

‘ 1. TAKE *May-Butter*, without Salt, and
‘ wash’d with Eye-Bright-Water, four Ounces;
‘ Tutty prepared, white Sugar-Candy, and
‘ Dragon’s-Blood finely powder’d, of each
‘ two Drams; Pearls prepared, one Dram and
‘ a half; white Vitriol, six Grains; *Sarco-*
‘ *col*, half a Dram; Camphire, half a Scr-
‘ *uple*; and solid Laudanum, four Grains; make
‘ into an Ointment.’ Or,

‘ 2. TAKE four Ounces of Pomatum;
‘ Sugar of Lead, one Dram and a half; and
‘ Camphire half a Dram: mix.’

§. 6. OR, Lastly, let *Platerius’s Cataplasme*
be apply’d; the excellent Virtues of which I
have often experienced.

‘ TAKE of four Apples (which are com-
‘ monly said to be vinous) reduced into a Pulp
‘ with Water of Corn-Flower, or Rose-Wa-

P

ter,

ter, two Ounces; of the Mucilage of Fœ-nugreek Seeds, half an Ounce; the White of one Egg; Blood-stone, half a Dram; the Bark of Pomegranate, one Dram; Cream of Milk, or Oil of Roses, a sufficient Quantity to make into the Consistence of a Cataplasm.

THIS Cataplasm is to be apply'd to the Eye when shut, and shifted twice in a Day.



C H A P. XI.

Of the PIN and WEB.

§. 1. **T**HIS Distemper of the Pin and Web, or Horn of the Eyes, though less frequently met with by Physicians, yet are such a Deformity to the Eyes, and so difficult to cure, that I would not willingly let them pass your Notice and Remembrance. Their Definitions are to be met with in *Riverius*, and in the *Ophthalmography* of *Plempius*, who has wrote the best of any concerning the Diseases of the Eyes.

§. 2. UNIVERSALS having therefore been comply'd with, that is to say, Phlebotomy (if the Patient is plethorick, and too much given to Drinking) and Purging, let the Cataplasm of *Platerus*, before describ'd under the Chapter of an *Epiphora*, be apply'd. If a *Catarrh*

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catrix has been an Occasion of the Disease, let the Powder of the Occidental Civet of *Paracelsus*, be blown upon the Part affected, thro a Quill, or the Powder of corrosive Sublimate; but then an Inflammation of the Eye may be expected: however that may be more easily remedy'd than a Cicatrix, or Web, or Horn of the Eye can be taken off.

§. 3. LET this Powder therefore be injected:

‘ TAKE of white Sugar-Candy, Aloes, and Tutty rightly prepar'd, equal Parts: mix.’

OR let the blue Water of the Barbers be touched upon the Eye with a fine Cloth, which is as follows:

‘ TAKE of Spring-Water, half a Pint, (or of any Eye-Water, such as that of Fennel or Roses) and dissolve in it one Dram of Sal Armoniack; let them stand together in a Brass Vessel until the Water is of a blue Colour, and then filter it. In the room of Spring-Water, Lime-Water may be used, if a more sharp Medicine be required.’

§. 4. BUT these Externals will then have their desired Effect the sooner, if after Universals, *Mercurius Dulcis* be prescribed in the same manner as we shall direct it to be used in the following Chapter.





C H A P. XII.

Of a GUTTA SERENA.

§. 1. **A** GUTTA SERENA is a Blindness which gives no Signs of Disorder in the exterior Parts of the Eye. Concerning this, consult *Riverius* and *Plempius*.

§. 2. BUT neither they, nor any other, have laid down inseparable and certain Prognosticks, whereby any one might know when this Disease was approaching; which, notwithstanding, is of the greatest Importance to be assur'd of: because after a *Gutta Serena* has once advanced to its Height, and become compleat, it is frequently too near being incurable.

§. 3. AND it is certain that when there is no Appearance of an Opthalmy externally, or no external Inflammation upon the *Cornea*; but Flies, Dust, and the like, seem to float over the Eyes: then there is an *Amaurosis*, or *Gutta Serena*, which is nothing else than an obstinate internal Opthalmy proceeding from a dis-temper'd Blood, and from the same Causes whence that is produced.

§. 4. THE reason of this is, that these Appearances are nothing else than the Parts of the
Retina,

Chap. 12. Of a Gutta Serena. 213

Retina, hid and compressed by the Blood-Vessels being too much stuff'd and distended: so that in many of its Parts all Sense is lost, and therefore can no Images be painted upon them; whereby the Eyes, as it generally happens, being continually rolling round, many Parts of Objects falling successively upon them, are obscure.

§. 5. THE most common Cause of this Effect is not too great a Quantity of good Blood, but of a viscid Blood; as, amongst many other Instances, may be proved by that related by *Timeus*, of a Person who fell immediately into a *Gutta Serena* after an Ulcer in his Foot had been too hastily cured, and stopt running.

§. 6. THE Cure of this Disease depends upon a Removal of the Stagnation in the Extremities of those Arteries which run over the Bottom of the Eye; and whatsoever forces away the Matter obstructing them, will also be able to remove the like Obstructions in the Arteries of any other Part of the Brain. For what is generally said concerning the Optick Nerves being obstructed in this Case, is ridiculous: for the Arteries must first be obstructed, *because there is nothing in the Nerves, which was not before in the Arteries*. And when a Nerve is obstructed, it may be taken for incurable; and therefore a Physician, who ought not to look upon any thing as incurable, should by all means avoid placing any

Obstructions in the Nerves: not to insist upon what is my own Opinion, of there being nothing contained within the Nerves, that can occasion their Obstruction.

§.7. THEREFORE, in the Judgment of a good Physician, after Blood-letting recourse is to be had to Purging, and that too which is strong; and afterwards *Mercurius Dulcis* may be prescribed to be taken from ten to fifteen, twenty, or twenty five Grains, for five, six, or seven Days, with one Dram of *Conserve of Roses*: or, if a *Diarrhea* is apprehended, with *Diascordium*, or *Venice-Treacle*, one Dram, in an Ounce of *Syrup of Cloves*, or *Diacodium*, Morning and Evening.

§.8. THEN let the Patient be purged for two or three times, and *Mercurius Dulcis* be again given in the same, or in greater Doses, as many times as before; Purging being again afterwards repeated. And when the Disease seems at length to give way, or the Strength of the Patient will not admit of any more Doses of *Mercury*, or cannot bear a more plentiful Salivation; or if they can bear it, after it is over, let the Decoction of the Wood and Bark of *Guaiaicum* be given for common Drink, made in Spring-Water, so that half a Pint may be drank warm in a Morning to raise a Sweat: but in the mean time must not be neglected *Seatons* and *Vesicatories*, although without these, *Mercury* and *Wood* (that is *Guaiaicum*) may be sufficient.

—Si

—Si Lumina Lignis
Defendi possunt—



CH A P. XIII.

Of a SUFFUSION, or a CATARACT.

§. 1. **T**HIS Disease is said to be a thick Concretion of Corpuscles mixing with the aqueous Humour of the Eye, by degrees taking away the Sight.

FOR the Causes consult, Riverius and P'lempius; and also for their Signs.

§. 2. BUT there is one inseparable Sign of a Suffusion, or Cataract, taken notice of by Plempius and others, which I would have it observed by all who study the Nature of the Eyes, not to agree in any respect at all to a Suffusion; for they affirm a Suffusion then to be drawing on, when various Representations float before the Sight, as Hairs, Dust, and the like: which Appearances are, in the Opinion of all Physicians, a true and legitimate Suffusion, if they are represented continually without any Intervals. These Representations they ascribe to Corpuscles floating in the aqueous Humour, which by

increasing, form the Cataract; some also ascribe them to the Condensation and Coagulation of the aqueous Humour, and others to the Condensation of the ChrySTALLINE Humour: but all these know nothing of the Nature of the Eye.

§.3. FOR Corpuscles floating in the aqueous, or chrySTALLINE Humour, are not perceived on the *Retina*; nor any thing adhering to the exterior Surface of the *Cornea*, nor a *Cicatrix* in it, can make the Representation of any Image on the Bottom of the Eye: whence neither one or more of these can be the Cause of the Appearance of little Bodies swimming about, as it were in the Air. For such is the Convexity of the *Cornea*, and the Position of the *Retina*, that an Object must be placed at a greater Distance from the *Retina* than the *Cornea* is, in order that its Image may be distinctly painted on the Bottom of the Eye; that is, that all the Rays proceeding from each Point of a visible Object may converge to as many Points on the *Retina*: whence there is no Point in a visible Object, from which Rays flowing, do not, or at least ought not to touch every Point in the *Cornea*. Therefore unless all the Rays emitted from each Point of an Object are collected in one Point of the *Retina*, they will not be of sufficient force to represent there the distinct Appearance of the Points, *i.e.* the Image of the Object. But it is impossible this should be effected according to the Rules of *Opticks*,
if

if the Object be too near the *Retina*, or not remov'd from it a sufficient distance.

§. 4. HENCE it follows, that if the beginning of a Cataract is accompany'd with the Representations of Images floating about, then there is also in the Eyes a *Gutta Serena*; and in such a Case, altho the Cataract be remov'd by a Surgeon, yet an incurable Blindness will ensue, which often happens, and seem'd to be the Case of the Patient in Page 55. of the first Book of *Timaus*, where that honest Man took that to be a simple Suffusion, which was also a *Gutta Serena*.

§. 5. THE Cure is here the same as in a *Gutta Serena*; for he would be mad, that should expect to have this Disease removed by any other external means than by the manual Operation of a Surgeon.

C H A P. XIV.

Of an Angina, Pleurisy, and Peripneumonia.

§. 1. **A**LTHO an *Angina* is not enumerated among the Diseases of the Breast by *Riverius*, yet since it is a Disease arising from a Stagnation of Blood, no otherwise than a Pleurisy or a Peripneumonia, and requires the

the same Means of Cure; therefore we shall treat of that in conjunction with these. But because these Inflammations, and indeed all other, are wont to be ascrib'd by Physicians to an Acid coagulating the Blood; therefore we shall here examine *Etmüller* in particular, who with more assurance than the rest, affirms an Acid to be the peccant Cause in these Cases: to which purpose we shall run over the Causes by him recited.

§. 2. ACCORDING to him, an *Angina* proceeds, *first of all*, from things stuffing up the Passages of the Throat. *Secondly*, From drinking cold Water. *Thirdly*, From too viscid a Serum. *Fourthly*, From too cold an Air, or drinking cold Liquor after warm Exercise. *Fifthly*, From the Suppression of some Evacuation of the Blood, and particularly that of the *Menses*.

§. 3. TOUCHING these Matters, it is of the first observable, that nothing offending in quantity can be for that reason an Acid. Of the second, that Spring-Water, so that it be neat and clear, cannot offend by any Acidity. Of the third, that Lymph or Serum may become viscid without an Acid; *scil.* by an Evaporation of its aqueous Parts, as we experience after much talking. Of the fourth, that the cold Air, as also cold Drink, is not on that account an Acid; and since they do mischief only after Exercise that has warm'd the Body, which they effect by what was hinted

ed at in the fifth place, by suppressing Evacuation: For these augment the Quantity of Blood without sharpening it, the menstrual Blood being no ways acid; and all cold things obstruct or lessen Transpiration, that is, *Evacuation*. And we will not deny but that Spring-Water drank cold may produce an *Angina*; but it does not follow from thence, that it is any Acidity of the Blood that is the Cause of such Inflammation, any more than a volatile Alkali may be so, since urinous Spirits will produce as easily the like Inflammation, taken in the same manner.

§. 4. A PLEURISY therefore, and a *Peripneumonia*, in *Etmuller's* account, arise also from a peccant Acid in the Blood; from whence, he says, that the Blood is coagulated, and the Membranes are vellicated to throw off such an offending Acid. The Causes of these Inflammations, according to *Etmuller*, are, *first of all*, a cold Air, cold Drink after the Body is hot, and hastily cooling the Body after drinking generous Wine; or singing much after such Drinking, as in a Clerk, who is no ways accustomed to drink Acids. *Secondly*, a Suppression of Evacuations from the Blood, as that of the *Menses*; and especially such a Suppression as proceeds from falling into a River, or a sudden Fright; wherein the Cure is to be perform'd with *Sperma Ceti*. *Thirdly*, The Stoppage or ill Cure of a Dysentery, or an Eruption driven inwards.

§. 5. TOUCHING these, it is to be remark'd, that as to the first and second, which include the most common Causes of a Pleurisy and a *Peripneumonia*, they have no Affinity to an Acid, but act only by augmenting the Quantity of laudable Blood within the Vessels; nor can *Sperma Ceti* in any manner dissolve the Blood coagulated by an Acid. And further, since we cannot imagine a Dysentery to be produc'd by an Acid (as hereafter it shall be shewn) the third Cause assign'd by *Etmuller*, has no relation to an Acid.

§. 6. BUT as to the Definition of those Effects, Signs of Distinction, and other common Observables, they may be met with in *Riverius* and others. We ascribe them to the Blood mov'd too slowly in the Arteries.

§. 7. FOR since all the Causes antecedent to those Effects agree in this one thing, that the wonted Evacuation of the Blood, or Parts of the Blood, by no means acid (since the menstrual Blood of Women, or the Blood breaking out from the Nose, is not acid, nor does its Suppression cause such Acidity) is suppress'd; or if the Blood that is not to be evacuated, but to be mov'd on thro the Vessels freely, be astring'd, (which cold Air and Drink will do) it is necessary that part of that Blood will stagnate somewhere, because the Vessels are not capacious enough to circulate it, when its Quantity is too much increas'd
by

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by a Suppression of its due Evacuation. And a Stagnation makes the Blood grow viscous; as a faulty Chyle, that is viscid by means of an imperfect Commination in the Stomach, yields a stagnant Blood.

§. 8. THESE things are from hence further illustrated, that those Diseases, according to the Observation of *Hippocrates*, and of all Physicians, set in mostly in a Southern Constitution of Air, and rainy Seasons. For then the Air is lighter, and presses the Blood less forcibly out of the capillary Arteries of the Lungs towards the left Ventricle of the Heart: with a less *Impetus* also it rushes into the Jaws; and the small Arteries there dispers'd being too much dilated, by means of the small Resistance which the weak Pressure of the Air occasions, are the Reasons why the Blood stagnates, and moves on more heavily in its Circuit. But there is no Suspicion of an Acid either in a Southern Constitution of Air, or in its Levity.

§. 9. THE Stagnation therefore of the Blood is to be provided against with all Application, and that as speedily as possible, for fear the Patient should be suffocated. The Physician must therefore, as soon as this happens to be the Case, order Bleeding in the Arm on the well Side, if the Inflammation is not on both; and if that happens, it is best to open a Vein in one of the Feet. Many, amongst whom is *Etmuller*, will have such Patients to make

make use of Medicines internally, that thin the Blood, and cause Sweat, before Phlebotomy: but those things before Blood-letting will force out only the less viscid Parts of the *Serum*, and make the remaining Mass yet more sizy, and thereby more aggravate the Inflammation. And therefore, before any other Remedy is made use of, let some Blood be taken away.

§. 10. BUT be ever mindful that when Pain, or any other Disease requiring Phlebotomy, affects only one Side, always to order Blood to be drawn from the opposite Side. And this must be done not once only, but repeated plentifully three or four times in grown Persons, to eight or ten Ounces at a time, especially in that Sort of *Angina* wherein there appears no Tumour.

§. 11. AFTER Bleeding two or three times, lay on a large Vesicatory to the Nape of the Neck: And in an *Angina* let also a Cupping-Glass be applied to the Shoulders.

§. 12. ETMULLER recommends drawing Blood from the Veins under the Tongue, immediately in the beginning of the Disease; but he is mistaken: for it is easy to perceive, how by that means the Inflammation must necessarily be increas'd, from deriving a greater Quantity of Blood to the Place affected.

Chap. 14. Of an Angina, &c.

2

§. 13. AFTER these things are done in an *Angina*, Purging is to be order'd; as for example, this Potion :

' TAKE Wood, or rather Bark of Guaia-
' cum, one Ounce ; boil in a Pint of Water,
' so as to press out but five Ounces, in which
' infuse warm for a whole Night, three Drams
' of Sena ; Seeds of Mallows, or Camomile-
' Flowers, one Scruple : in the straining of
' this, dissolve either one Ounce of Syrup of
' Buckthorn, or two Drams of Electuary of
' Roses, with five Grains of *Diagridium*.'

SUCH a Purge as this, I say, must be prescrib'd in an *Angina*, or a Peripneumony, where there are any Appearances, especially of the Stomach, Lungs, or Mouth, being furr'd over with a tough Slime.

§. 14. IN the Evening, after Purging, let this Emulsion be directed :

' TAKE one Dram of the four greater
' cold Seeds ; two Drams of white Poppy-
' Seeds ; four Ounces of Corn-Poppy Water,
' and Black-Cherry Water, each : and if in a
' Pleurisy the Patient spits Blood, add three
' Grains of Sugar of Lead, which mix toge-
' ther with Syrup of Violets and of Corn-
' Poppies, each six Drams.'

§. 15. BUT observe always that in a Pleurisy more Blood ought to be taken away, than in a Peripneumony.

§. 16. IF the Patient is manag'd after this manner, there will be no need of expecto-
rator

rating Medicines. But one thing is however to be remark'd, that in that Species of a Peripneumony, which seizes a Person in very cold Weather in the Winter Season, after eating any crude Food, and which most commonly reigns amongst the poorer People, producing in them Viscidities; in this sort of Peripneumony, I say, after Phlebotomy, Vomiting is required with the Emetick Wine: and this seldom fails of answering a Physician's Expectation.

§. 17. BUT if a Physician is so unfortunate, that the Patient has staid too long before calling in for his Assistance, and Blood-letting has been omitted, (I mean not any longer an *Angina*, for which nothing can be further done than what has been already taught; for *Gargarisms* are ridiculous, and good for nothing in an *internal Angina*; and an *external* one is to be cured by external Suppuratives, if Bleeding, Purging and Blistering does not conquer it) that is, if the Disease is come to that height, and the Strength of the Patient so far wore out, as to make it hazardous to draw Blood away; then lest the most valuable Remedy should have the Disgrace of not answering, recourse must be had to other Means.

§. 18. AMONGST which we shall recommend the most efficacious: and first of all, to take away the Blood's Stagnation, this *Infusion* may be used.

‘ TAKE

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‘ TAKE of Hog’s Dung, or the Dung of
‘ a Stone Horfe, whilst warm, one Ounce ;
‘ Carduus-Water, and Corn-Poppy-Water, of
‘ each four Ounces ; Salt of Carduus, one
‘ Dram ; Castor ty’d in a Nodule, one Dram :
‘ let them stand together six Hours in a warm
‘ Place ; when strain’d, sweeten it with Sy-
‘ rup of Violets. Let the Patient take a
‘ Spoonful every other Hour.’

THE Powder also of a *Horse’s Pissle*, or
of any other, to the Quantity of two Scrup-
les for a Dose may be given ; and if the
Patient spits Blood, the following *Electuary*
will be fuitable.

‘ TAKE Sperma Ceti, Boar’s Tooth, or
‘ Pike’s Jaw, or red Coral prepar’d, two
‘ Scruples ; Syrup of Marsh-mallows, three
‘ Ounces.’

LET it be taken a Spoonful at a time,
drinking afterwards some of the following
Julep :

‘ TAKE Frog-Spawn-Water, and Camo-
‘ mil-Flower-Water, of each two Ounces ;
‘ Barley-Cinnamon-Water, half an Ounce ;
‘ Crabs-Eyes prepared, two Drams ; Sugar of
‘ Lead, three or four Grains ; Sal Prunella,
‘ one Scruple ; Syrup of Maiden-hair, one
‘ Ounce. Mix.’

§. 19. Here also is prescribed *Linseed Oil* by
Expression, one Ounce, with an equal Quan-
tity of *Syrup of Maiden-hair*, or with an equal
Part of *Oil of Sweet Almonds*, edulcorated with

Q

Sugar :

Sugar: But I rely more upon *Sperma Ceti*, a Scruple of which may be given twice or thrice in a day, with the Syrup of *Corn-Poppies*: Their Drink in the mean time may be a Decoction of the Flowers of *Fluellin* in Spring-Water.

§. 20. *LINIMENTS* made with Oil of Sweet Almonds, Spirit of *Sal Armoniack* and *Camphire*, are very good externally apply'd for easing Pain. If there be a *Suppuration*, so that Matter is collected in a *Cistus*, or thrown out into the Cavity of the *Thorax*, the Assistance of a Surgeon is necessary. But wo be to that Patient.

§. 21. IT here remains to be enquired how it comes about that pleuritick Patients more easily rest upon the Side affected. And indeed if the Lungs adher'd to the *Pleura*, in such Persons, it would be no wonder to feel a great Pain upon lying down on the contrary Side. Now the Carcases of such dissected, shew, that their Lungs, for the most part, do so adhere; and without Dissection, it is very probable from hence, by reason they throw up Matter out of their Mouth, and that even before an *Empyreuma* commences: which could not well be, unless the Lungs did so cohere. Wherefore pleuritick Persons, who have their Lungs grown to the *Pleura*, and the *Pleura* is inflam'd, that is, dilated with too much Blood stagnating therein, cannot easily lie down on the well Side, because the Lungs would then weigh

weigh down the *Pleura*, already too much upon the Stretch, with exquisite Pain.

§. 22. **LASTLY**, It is to be taken notice, that the *Pleura* of *Pleuriticks*, and the Lungs of those labouring with a *Peripneumony*, do, upon a Dissection after Death, most frequently discover a great number of *Polypi*: Now a *Polypus* is only a stagnant Blood that has lost its red Colour. But it seldom happens that the *Pleura*, alone is inflamed without the Lungs.



C H A P. XV.

Of an ASTHMA.

§. 1. **A**N *Idiopathick Asthma* (which is here meant) is defin'd to be a *Difficulty of Breathing*, by means of some Fault in the Lungs, or of something contained in the Lungs.

§. 2. **THE** Causes of an *Asthma* are, first of all, tough and mucilaginous Juices sticking in the *Bronchia*, which, according to some, are collected from Lymph vitiated by the Air. Secondly, By hurting the Refreshment of the Lungs with Fumes of Metals, especially of *Mercury*. Thirdly, A Consumption of the Lungs, by Matter, or Pus, thrown upon them. Fourth-

ly, Vehement Exercise. *Fifthly*, A Suppression of the *Menses* or Hæmorrhoids. *Sixthly*, An ill Habit from a viscid Blood, by means of an indigested Chyle. *Seventhly*, Sudden Frights.

§. 3. THESE are what are commonly reckon'd up. But in one word, whatsoever, whether Liquids or Solids, occasion that the Blood runs more slowly thro the Lungs, that is, either by straitning the Canals, or thickening the Blood, or by hindring the Motion of the animal Spirits, so that they cannot elevate the Breast, or the Blood is more rarefy'd, or more in Quantity, so that there is not sufficient Room to receive it in the Vessels of the Lungs: All these Causes will produce an *Asthma*.

§. 4. ETMULLER would have it that the Cause of an *Asthma* was very often in the Stomach, and that more frequently than in the Lungs: but that can be true only of a *Sympathetick Asthma*. For the peccant crude Matter is gradually convey'd from the Stomach of some Persons thro the Lacteals into the Blood-Vessels, and so into the Lungs, which it stuffs up, and thereby occasions an *Asthma*. And this is mostly confirm'd from hence, that such Patients perceive themselves worse after Meals; for the Food by its Motion dislodges the *Lentor* adhering to the Stomach; so that it is the more easily thrust forward into the Lungs. And again, such are sometimes affected

fectured with Wheezing; from whence it is plain, that the viscid Matter makes an *Asthma*, when it is in the Lungs, and not when in the Stomach, since such Wheezing cannot be but from Obstructions of the Lungs, or from their being not sufficiently dilated.

§. 5. BUT further, that viscid Matter, from what Cause soever growing turgid, and beginning to swell, by its Distention of the Stomach, and hindering the Motion of the Diaphragm, does not occasion a dangerous *Asthma*, according to the Opinion of *Etmuller*, and some others. For by such Matter the Stomach is not so much, or at least not more distended or inflated, than by a plentiful Meal; and therefore a dangerous *Asthma* can no more arise from that than from this.

§. 6. AS to the Cure therefore; if an *Asthma* is very dangerous, that is, if there be the greatest Difficulty of Breathing, so as to hazard immediate Suffocation, a Vein ought to be open'd, before a Cathartick can be given, and have time to operate. For Bleeding always abates the Paroxysm, and relieves the Patient, and it procures a Truce, wherein other Remedies may be provided. Again, if a *Plethora*, or a sudden Rarefaction of the Blood (but to a *Plethora*, I subjoin likewise all Suppressions of Evacuation) is the Cause of the *Asthma*, or accompanies it, there will

be a necessity of Bleeding; for in such a Case Bleeding will remove the Distemper.

§. 7. YET in any other Cause but this of a *Plethora*, an Emetick is always to be given at first; which by shaking the whole Body, will also derive Matter from the Lungs, in the same manner as we see it to be drain'd from the Glands about the Eyes, Nose, and Mouth: nor will once suffice, but it ought to be repeated for many times.

§. 8. AND altho before all others I prefer *Antimonials*, by reason their Efficacies have been confirmed by long Experience; yet here I recommend *Tobacco-Leaves* from one Dram to half an Ounce, or an Ounce, boiled in six to four Ounces of Spring-Water, and the Liquor then to be strain'd out for Use. This Liquor, I say, made palatable with Sugar, will be an useful Vomit. At first of all but half this Decoction may be given, and you may wait till the Patient vomits; which if he does not do, then let him take the Remainder, and drink with it warm Water, or small Beer, or *Posset-Drink*.

§. 9. AFTER Vomiting, or if it be omitted on account of the Patient's Weakness, after the Paroxysm, Purging is to be made use of, with the Juice of common Orrice or Dwarf-Elder. Or Pills may be given with the Addition of *Resin of Jalap*, or *Mercurius Dulcis*, such as:

TAKE

‘ TAKE Gum Ammoniack, Diagridium,
 ‘ Refin of Jalap, of each half a Scruple ; Vo-
 ‘ latile Salt of Amber, five Grains ; Elixir of
 ‘ Property, a sufficient Quantity to make in-
 ‘ to a Mass of Pills for one Dose.’

§. 10. ONCE in a Day, when the Patient
 does not purge, or after Purging is over, the
 Juice or Infusion of *Millepedes* in *Rhenish* or
Spanish Wine, may be given : as,

‘ TAKE of live *Millepedes*, number
 ‘ twenty five, or thirty, and infuse them in
 ‘ four Ounces of Wine.’ Or the following :

‘ TAKE Gum Ammoniacum, one Scr-
 ‘ ple ; and dissolve it in two Ounces of Pe-
 ‘ ny-royal Water warm.’

§. 11. BUT I prefer *Sperma-Ceti*, half a
 Dram, to be given in warm Wine or Ale ; for
 this is the most efficacious of all in driving
 away the Fit, and gives place to no Remedy
 but *Phlebotomy* : and it is even more eligi-
 ble than that to weak Patients. After this, in
 the Attack of the Paroxysm, I recommend
 the Juice or Infusion of *Millepedes* ; next
Gum Ammoniacum dissolved in any spirituous
 Liquor : and then may be prescribed Flowers
 of *Benjamin*, any *Volatile Salt*, dry or dis-
 solved, Powder of *Millepedes* ; and all these in
 the Fit.

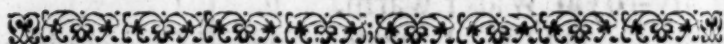
§. 12. A GREAT deal of Advantage
 might be had from a Decoction of the Woods
 and Barks of *Guaiacum*, *Sassafras*, or of the
 greater *Bardock* Root, in common Water. Nor

does *Millepedes-Ale* give place to any thing; made by putting live *Millepedes* into fermenting Ale, lightly bruised and tied in a Bag, in such a Quantity, that ten *Millepedes* or more may be allowed for every Pint of Liquor. And this must be used for common Drink.

§. 13. OR let the following *Tincture* be given by Spoonfuls:

‘ TAKE *Spanish Wine*, one Pint; Flowers of Sulphur, two Drams; volatile Salt of Harts-horn, and Amber, of each two Scruples: let them stand together in Digestion for four Days.’

THIS was a Secret with *Willis*.



C H A P. XVI.

Of a Phthisis, or a Consumption from an Ulcer in the Lungs.

§. I. IT does not seem necessary to be very solicitous about the Causes of ulcerated Lungs; since the Lungs may be ulcerated by all things which first induce an *Inflammation*: and the Causes of an Inflammation we have examined in the Chapter of a *Peripneumony*. But because *Etmuller*, and *Morton*, above all others, charge the Cause of this Disease upon an Acid abounding in the Blood, or the Collection of some Malignity; we shall however

ever enquire into the Foundation of such their Errors.

§. 2. MORTON therefore in his *Phthisiologia*, lib. 11. cap. 1. alledges the Procatartick Causes of this Disease to be, *First*, a Suppression of some accustomed natural Evacuation, as are the *Menses*, *Lochia*, old Ulcers, Issues, and sweating of the Feet; without the Correction of the Causes from whence these proceed. *Secondly*, Great Passions of the Mind; such as are those of Fear, Anger, Sorrow. *Thirdly*, Too large and unseasonable Quantities of Meats or Liquors, especially the tipping spirituous Liquors; which, *Morton* says, he has observed to be frequently accompanied with Care and Sorrow, and so the Cause of a Consumption. *Fourthly*, A neglect of due Exercise. *Fifthly*, Night-Studies, long Watching, and also sleeping immediately after eating in the Day-time. *Sixthly*, A thick and marshy Air. *Seventhly*, Contagion. *Eighthly*, Chalky Stones in the Lungs. *Ninthly*, An ill Conformation of the *Thorax*. And, *Lastly*, Other Diseases, amongst which he accuses Hysterical Affections, Intermitting Fevers, and Diseases of the Breast, ill-managed, as an *Asthma*, a Pleurisy, or a Peripneumony.

§. 3. BUT it will easily appear to any one who considers these things, that they cannot proceed from an Accumulation of Acidity in the Blood. If the Evacuations first enumerated were Excretions of an acid Liquor, then their

their Suppression would be storing up an acid in the Body; but the menstrual Blood, or Loches, are not Excretions of an Acid, but a laudable Blood. By Issues also, and Ulcers, is evacuated a good Blood; only that it runs to *Pus* after it is parted from the Blood-Vessels. Nor does ever the Blood, or the Serum of the Blood, contract an Acidity, unless by Stagnation out of the Vessels: so that Stagnation, or the Causes of Stagnation, must be the Origin of a Consumption.

§. 4. WHAT he advances in the second and third place, sufficiently shew, not an acid, but a stagnant Blood to attend; since a Fear and Concern of Mind are always accompany'd with a sluggish Motion of Blood, and therefore with a beginning Stagnation; but Anger with a Rarefaction of it: to which if there be added spirituous Drinks, that is, what augment such Rarefaction, there will be too much Blood, because it will take up too great a Space; and therefore by reason of its Quantity, and not its Acidity, will it break the Vessels, and make Ulcers. And since this is the most frequent Cause, according to *Morton's* Account, it follows, that an Acid is not the most common Cause of a Consumption.

§. 5. WHAT is alledged in the fourth Place, manifestly augments the Quantity of good Blood: For by ordinary Exercises, we waste that which must be repair'd again, and augmented with Food, and not by an Acid. It

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is manifest, that Study also, and Sleep after Meals, does not encrease an Acid; but only lessen the Motion of the Body, and the Commination of the Food, and thereby generate a more viscid Chyle.

§. 6. BUT Watching, and too much Motion, by wasting the aqueous Parts, leaves the remaining Fluid more thick, and apter for Stagnation, The same also does a thick Air.

§. 7. AND it is evident, that a narrow Chest, which does not give Capacity enough for the Lungs, can be no Acid; but apt to induce a Stagnation of the Blood from the Impediment given thereby to the Lungs.

§. 8. NOR can chalky Stones be reduced to the Class of Acids. And we affirm, that a Contagion or Malignity, is a peculiar *Lentor* of the Blood without any Acidity.

§. 9. AND let it be added, that besides the Effects of Cold, whereby the Body is constringed, and the Mass of Blood compelled to stagnate, the manifest Cause of a Consumption is often living in an House just built, and new plaster'd or white-washed: but from these nothing of an Acid can expire, but somewhat only dense, which lays a Weight upon the Blood-Vessels of the Lungs.

§. 10. FROM *Riverius* are to be had the distinguishing Signs of three Degrees of a Consumption; and observe well, that the Consumption by me here treated of, is mostly attended with

with an obstinate Cough : for at present I speak only of that sort which comes under our Cure in the first Degree.

§. 11. SINCE herein Fear is lest the stagnant Blood should produce an Inflammation, an Abscess, and an Ulcer, a Vein is to be open'd ; unless the Patient has been sunk too much in his Strength already by Evacuations.

§. 12. AFTERWARDS if a Load of Viscidity at the Stomach (which may be known by a Dejection of the Appetite, an Inflammation of the Stomach, and Belching) supplies the Stoppage of the Lungs, a Vomit suitable to the Strength of the Patient, will be convenient ; and this I have experienced to be both useful and safe. In this Circumstance I have often given an Ounce of the Juice of *Orrice*, with as much *Manna* ; and I have order'd with good Success, half a Dram of the *Edinburgh Ecphractic Pill*, with a Grain also and an half of *Elaterium* ; altho those who I have prescribed them to, had almost the *Hippocratick Face*.

§. 13. BUT *Etmuller* forbids Purging in this Case ; because (as he says) afterwards the Cough will return in the Evenings more vehemently ; but he is mistaken : not considering that an *Opiate* is to be order'd at night after such *Catharticks*, as well as after *Vomiting*.

§. 14. IN the mean time *Blisters* and *Iffues* in the Nape of the Neck are proper; and with these the Cough for the most part either goes quite away, or abates.

IT follows, that the Remains of viscid Blood, and what has contracted a Hardness by Stagnation, should be attenuated; not by any thing contrary to *Acids*, but by whatsoever is subtle, and can insinuate into the Interstices of the stagnant Humours: and these, whether *Acids* or *Alcalies*, will effect such a Separation, if they be but small enough to penetrate.

§. 15. WHEREFORE in this Circumstance, the *Tincture* prescribed in the Close of the Chapter concerning an *Asthma* will be of use: and besides that, the Juice of *Millepedes*, as also the *Decoction* of *Guaiacum* (unless it be for Females of very nice Constitutions, with whom the *Decoction* of *Sarsa* better agrees) such as *Etmuller* transcribes for a Consumption out of *Lotichius*. But instead of Common Water for this *Decoction*, *Lime-Water* ought to be used, which prevails beyond all others, (if an efficacious Medicine be wanted) and before all other Herbs, the *Ground-Ivy* is most to be esteemed.

§. 16. I HAVE known the *Water-Cresses* given to consumptive Persons with Success, and other *Antiscorbuticks* of the same Class; and the *Conserve* of the Herb and Flower of *Ground-Ivy*, which I account beyond all others.

§. 17. BUT to the more robust Constitutions, nothing will do so much good as the following Pills:

‘ TAKE of Elicampane-Root, Laurel-Berries, Cummin-Seeds, Foenugreek-Seeds, Flowers of Sulphur, Sugar-Candy, each two Parts; Sugar and Liquorice, of each one Part; let them be sprinkled with twenty Parts of white French Wine; which being put over the Fire, add of the chymical Oil of Annise Seeds, and of Venice-Treacle, of each one Part; Syrup of Colt’s-Foot three Parts; Oil of Olives, and Honey, of each eight Parts, or a sufficient Quantity to make into a Mass for Pills: of which let one Dram be given for a Dose. Let these Pills be used in the time of drinking the above-mentioned Decoction.’

§. 18. BUT so long as the Consumption is in the first Stage, and it is probable that there is no Blood extravasated, and an Ulcer is not yet formed; before the use of the Decoction, and during the time of Purging, *Mercurius Dulcis* ought to be given: not on the same Days with the Purges, but some days after without them. For the other Stages of this Distemper, consult *Morton*.



C H A P. XVII.

Of a CATALEPSIS.

§. 1. **R**IVERIUS accurately enough describes this Distemper. *Etmuller* places its Cause in a greater Fixation of the natural Spirits, and a less Aptitude to Motion than is naturally requisite. The same is the Opinion of *Sylvius*, who affirms, that in a *Catalepsis* the Spirits are torpid, unapt for Motion, and as it were coagulated. Others deduce its Cause from a muriatick Juice, filling the Nerves with an Acid.

§. 2. **B**UT that Rigidity which is so sensible in this Distemper, is not from any Inaptitude in the Spirits for Motion; but is a Stiffness from the natural Spirits inflating the Parts, and can be only when they flow into the Muscles in great quantity, from whence their Contraction continually proceeds, or a Stiffness. But they who fancy the Cause to be an acid Serum in the Nerves, ought first to allow that there is such a Serum in the Blood, which would therefore coagulate it, and produce an Apoplexy or Death, rather than be the Cause of this Distemper.

§. 3. THEY reason better, who derive a *Catalepsis* from too great a Quantity of Blood; so they confine it not to the Blood in the Vessels of the Brain only, but to the Mass throughout the whole Body.

. 4. BUT too great a Quantity of Blood is not always the Cause of this Distemper, as we shall presently see; since sometimes it proceeds from too great a Scarcity of Blood.

§. 5. WHEREFORE a *Catalepsis*, so far as it belongs to the Consideration of a Physician, is a *Species of an Epilepsy*, attended with a constant Contraction, either stronger or weaker; and it proceeds either from an *universal Repletion*, or *Exinanition*: for therein the animal Spirits flow equally alike into all the Antagonist Muscles, and thereby a Person will be detained in an *Equilibrium*; and this either in a greater Quantity than natural, which will cause a Stiffness; or in a lesser Quantity than natural, and that will be attended with a Flaccidity of all the Parts about the Joints: and a greater or lesser Quantity of animal Spirits, proceeds from a greater or lesser Quantity than what is natural of the Blood.

§. 6. HENCE it follows, that the Cure of this Distemper ought to be the same as that which was laid down in the Chapter of an *Epilepsy*.

§. 7. I CANNOT but however admire at *Sylvius*, who places the Cure of a *Catalepsis* chiefly in Medicines endued with a *volatile*

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tile Salt; whereas he had but just before charged the Cause of it upon a Coagulation of the animal Spirits, from some Spirit like what is drawn from human Urine fermented.

C H A P. XVIII.

Of Diseases of the Stomach.

§. 1. **P**HYSICIANS charge many Diseases upon the Stomach; we shall refer them only to two kinds, *viz.* the Affections of the Stomach *too full*, or *too empty*.

§. 2. **W**E say then, that the Symptoms of a Stomach *too full*, are, an *Anorexy*, or a Loss of Appetite; *Apepsy*, or a depraved Concoction, in part or wholly so; and a *Reaching to vomit* up either Blood, or Choler, or some other of its Contents.

§. 3. **B**UT the Symptoms of a Stomach *too empty*, are either a *Dog-Appetite*, a *distemper'd Thirst*, or the *Pica*, that is, a depraved Appetite.

I. *Of the Diseases from the Stomach too full.*

§. 4. **B**UT since the Symptoms of a Stomach *too full*, differ not but in degrees of Fullness, it follows, that the Method of Cure

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should be common and alike to all. And we shall begin with

An Anorexy and Apepsy.

§. 5. THE Causes of these, I say, are both the same; that is, whatsoever hinders or diminishes the Motions of the muscular Coats of the Stomach, or eludes its Force: from whence it is, that Paralyticks neither crave Food, nor digest it. But because the Palsy is infrequent, and the Symptoms of an *Anorexy* and *Apepsy* are common; these therefore for the most part depend upon the Quantity or Tenacity of some Humour, which hinders or eludes the wonted Contraction of the Stomach, in such manner, that the interposing Viscidity prevents all Sense of the Sides of the Stomach constringing themselves together, or occasions the Food to slip away from the Attritions of its Membranes, by the Interposition of a soft slippery Matter.

§. 6. BUT that it may be plain and evident, that the Want of Appetite does proceed from a Fullness of the Stomach only, and therefore that its Cure must be by Evacuation; its known Causes appear to be, *First*, A hot Season, whereby the Air does not come into the Stomach cool; whence the inner Fibres thereof are not constringed, as they are wont to be in the Winter-time, but there is room for Transudation into its Cavity: For which reason *Hippocrates* would have the up-
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per Venters purged in the Summer. And if there be any thing secreted by the Glands into the Stomach in Summer-time, it must be viscid by the flying away of the lighter Parts; but it is otherwise in Winter: for which reason the Appetite and Digestion is then better.

§. 7. *SECONDLY*, Fat things take away both the Appetite and Digestion; and for this reason chiefly, because all Viscids gradually insinuate themselves into the Coats of the Stomach, and relax their Fibres, and hinder the Rarefaction of the nervous Liquid with the Blood: and thereby is a due Commi-nution of the Food prevented by a Loss of the due Contraction of the Stomach.

§. 8. *THIRDLY*, *Narcoticks* induce an *Anorexy* and an *Apepsy*; because they too much rarefy the Blood, and so dilate the Arteries that the animal Spirits cannot flow out sufficiently to contract the Stomach, by the Nerves being thereby too much compressed: And hence it is that *Tobacco* is so prejudicial to the Appetite.

§. 9. *FOURTHLY*, Some observe the Appetite to sink upon Sorrow, or a Disuse of Venery; but such a Disuse is a suppressed Evacuation, and thereby it makes a Fullness in the whole Body, and of course in the Stomach. And Sorrow is accompanied with a more weak and sluggish Motion of the Blood, and animal Spirits; and therefore with a less frequent and weaker Contraction of the Stomach:

mach: but a weaker, and less frequent Contraction of the Stomach, will less shake off what adheres thereto; and therefore such Matter will encrease there to a certain Plenitude.

§. 10. *FIFTHLY*, The Defenders of a stomachick Ferment confess, that Appetite and Digestion are lost when that Ferment is not sufficiently volatile, but too much fixed, and tainted with a foreign Sharpness: whence arise four Crudities. This confirms our Doctrine; for fixed Acids are always joined with the Viscidities in our Bodies, and by coagulating the Blood hinder its Rarefaction: wherefore upon a double account they disturb the Contraction of the Stomach, and its Consequences. But that there is no stomachick Ferment in the Sense of these Writers, is from hence manifest, that Choler regurgitating up into the Stomach, although endued with a volatile Acrimony, takes away, and not creates an Appetite, or the Faculty of Digestion. And here I shall observe to you, that every Acid which is in the Stomach, is made by the Food and Drink stagnating there longer than it ought: For those things which are in the Stomach are accounted to be out of the Animal, because they are out of the Bounds of Circulation; and therefore Meats rarefy and sour. Wherefore Acidity is a Fault in the Stomach, and not its natural Ferment.

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§. 11. AND the Patrons of a stomachick Ferment could never explain why those Parts of the Food, which are nearest to the Sides of the Stomach, are digested first; and why it is that Pieces swallowed down large are dissolved in those Parts first which are outermost: For a Ferment insinuates into the very middle of any thing put into it. Wherefore it must be confessed, that the Action and Attrition proceeding from the Sides of the Stomach does supply the Place of a Ferment; which Action is hinder'd by any viscid Humour therein.

§. 12. BUT the Spittle, which with many passes for a Ferment, is not acid, nor subacid, in healthful People (as every fermentitious Liquor ought to be) but sat'd with a urinous Spirit and Salt. Nor does it any thing further in Digestion and Appetite, than preserve the Stomach from being too much dry'd by the Air which drives down into it, so that it could not yield to Contraction; and moisten the Food, that it may easily give way to Commi-nution.

§. 13. THEREFORE the Cure of an *Anorexia*, and an *Apepsia* is performed by purging either upwards or downwards; and then by those things which absterge and divide, without any considerable *Stimulus* or purgative Power. But if any one thinks fit to administer Catharticks, and Incisers at the same time, it will answer the end.

§. 14. **WHEREFORE** after Vomiting, or Purging downwards, it will be of service to give the bitter Decoction in the *London-Dispensatory*, with a single or a double Quantity of *Sena*; and that to be repeated four or six times, every third or fourth Day.

§. 15. **I SAID** that after Catharticks it is convenient to give Medicines which cut the Parts of the *Lentor* with a very small astimulating Force; amongst which I commend *Agrimony* Leaves, or the Preparations of *Quinces*; *Sal Armoniack*, mixed with *Crab's-Eyes*, and taken in common Drink; the Tincture of *Hiera Picra* made in *Spanish Wine*, with an Addition of *Cochineal*; a Tincture of *Wormwood*, *Elixir of Property*, and principally the *London-Dispensatory Decoction*: to every Dose of which ought to be added one Scruple of *Salt of Wormwood*, or *Salt of Tartar*; to which the following is like.

‘ **TAKE** Leaves of *Agrimony*, *Maiden-Hair*, each one Pugil; Tops of the lesser *Centaury*, two Pugils; *Camomile Flowers*, one Pugil and an half; *Citron Seeds*, half a Pugil: boil them in *Spring-Water* one Pint to the Consumption of half; give four Ounces, two hours before Dinner, and the rest before Supper.’

§. 16. We are now come to the vomiting up *Choler*, or of a Liquor tinged yellow, and tasting bitter; which is called

Cholera

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Cholera Morbus.

§. 17. FOR although this is also evacuated downwards, yet for Reasons hereafter to be given, we shall treat of this Disease amongst the Affections of the Stomach.

§. 18. THE Origin of a *Cholera Morbus* is deduced by Physicians from an Effervescence in the Blood-Vessels, raised by a foreign and vitiated Ferment; whereby the Bile and pancreatic Juice are more plentifully separated from the Blood, and those Juices being sharper than usual, stimulate the Bowels more than before.

§. 19. I CANNOT indeed agree that any foreign Ferment mingled with the Blood can add to the vellicating Acrimony of the Bile and pancreatic Juice: For this Ferment in those Persons is produced in the Stomach from some kinds of Fish, from Summer-Fruits, and other Substances which suddenly putrefy therein. But all things putrefy without the Animal, that is, in the first Passages, and before they circulate; for after they come into the Animal, and are carried in the Conveyances of Circulation, and are moved and diluted with other Liquors, they are divested of their Acrimony and vellicating Power. From whence it is well known, that Poisons do mischief only while they adhere to the Stomach, but not after they are translated into the

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Blood; as may be seen in *Wepfer's History of the Cicuta Aquatica.*

§. 20. WHEREFORE the Causes of this Distemper exercise their Force before they get into the Blood; to wit, by stimulating the Fibres of the Stomach, they excite convulsive Motions therein. And when the Quantity of Fluid exciting such Motions is large, those Motions will be communicated to both the Orifices of the Stomach at once; and from thence, as either prevails, its Protrusion will happen to be at both alternately.

§. 21. BUT the alternate Convulsions of the Stomach, and its Dilatations arising from Matter putrefying and rarefying in it, will press out whatsoever is in a State of Separation in the Liver, Gall-Bladder, and Pancreas, and derive it into the Bowels.

§. 22. AND a very small Quantity of a bitter Fluid will infect the Juices of the Stomach; so that every thing which is brought up by Vomit, or thrown down by Stool, will seem *bilious*.

§. 23. AND it is manifest, that the Accidents common to a *Cholera Morbus*, as Feverishness, Faintness, and Pains in the Head, are also Symptoms of convulsive Motions at the Stomach, but not of any Ferment in the Mass of Blood; and that a violent Motion must be raised in the Stomach, from some fretting Matter there, before there will be any immoderate Effusion of Choler. For such

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a Matter, how much soever inclinable to Effervescence, will not any more be moved to some Parts than to others; and therefore a Fermentation induced into the Blood cannot be the Cause of the Effusion of Bile into the Intestines; unless there be added the Assistance of the muscular Force of the Stomach to press the Liver, and thrust out its Contents.

§. 24. SINCE I have said this Distemper is owing to Summer-Fruits, and other things which putrefy in the Stomach, the Method of Cure will not be difficult; for since this Putrefaction stimulates the Stomach and Intestines, and irritates them to Excretion, there will be no need of Purges, either upwards or downwards. And as there is a necessity for Excretion, no Astringents will be proper, so long as there are any Remains of putrefying Matter left behind. Wherefore as when a Person has taken an Emetick sufficiently strong, no one in his Senses will give another Emetick, or a Purge, or any thing to stop Vomiting; so in this Distemper we must proceed upon the same Considerations: therefore as upon giving an Emetick, so in this Case the disturbed Humours are to be diluted with some small and thin Liquor, most suited to be impregnated with them; that the viscid may be render'd easier for Expulsion, and the sharp and stimulating more soft. For by such means the convulsive Motions will cease

cease in the Stomach with little trouble, and their Causes will be entirely removed.

§. 25. WHEREFORE in the beginning let the Patient drink plentifully of Whey, or warm Water, or lean Broth, or small Beer, so that it is not sour, at several Draughts often repeated, after the same manner as it is order'd to them who take an Emetick.

§. 26. AND to pour it down by the Mouth, is sufficient to those under this Distemper who chiefly vomit; but if also (which is frequently the Case) they purge violently by Stool, altho it may suffice for them to drink but the more plentifully of such Liquors; yet it may be of advantage also to add Clysters to their Cure, made of the same, mixed only with Oil, and repeated every Hour.

§. 27. IF the Physician should happen to be called in late, when he has reason to suspect that a great part of the putrefying Humours are forced off, yet he may go on in the same way; adding only to the Drinkables, *Syrup of Lemons*, or of *Sorrel*, or *Marmalade*, or, which I prefer to all the rest, *Syrup of Violets*, or *Marshmallows*. And also, if it be practicable, a *Decoction of Mallow*, or *Marshmallow Leaves* in Spring-Water often given, will do service, and will avail as much as all other things together.

§. 28. BUT if a Physician is not called before the Evacuation cease, and there yet remains

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remains an Endeavour of Expulsion; but the Strength of the Patient is wasted, (which may be known by considering the Pulse, and the Quantity already discharged) and he is just upon Fainting; then he is to be managed in the same manner, as after the Operation of a Vomit, when the Reaching is to be lay'd, and Rest procured: that is, Opiates are to be given but warily, and in small repeated Doses, in a liquid Form.

§. 29. LET the Form be,

‘ TAKE Mint-Water, one Ounce and a half; Camomile-Flower-Water, two Ounces; Cinnamon-Water, half an Ounce; Salt of Wormwood, half a Dram; Confection of Hyacinth, one Dram; Laudanum Cydoniaticum of *Helmont*, forty Drops: mix.’

THE *Laudanum* of *Helmont* is,

‘ TAKE Opium powder'd, four Ounces; fresh Juice of Quinces, four Pints: let them digest together for three Weeks; then add Cloves, Nutmegs, and Cinnamon of each one Ounce; digest again for a Week, and on the beginning of the last Day, add one Ounce of Saffron; and after this filter, and evaporate it to a third Part, to make a Tincture.’

TWENTY Grains of this Tincture may be computed equal to one Grain of *Thebaick Laudanum*. But if any one has a mind to have this in the Form of a Pill, it may be evaporated to the Consistence of Honey, and the

the Saffron must be thrown in at last powder'd, so as to make a Mass for Pills.

§. 30. AND this is the true Cure of a *Cholera*; concerning which I would further have it observed only, that most Practitioners prescribe *Sudorificks* in the beginning of the Disease, in order to evacuate the peccant Humours; than which nothing can more foolishly be imagined: since the Humours which they endeavour to carry off in this Disease, cannot be got thro' the cutaneous Passages by reason of their Grossness, as it will appear to any one upon due Examination. Besides, Experience has long convinced me, that the Sweating-Method, and all means of Cure of this Distemper, by *Alexipharmicks*, *Precipitants*, *Corroborants*, or *Astringents*, are of ill Consequence, as well as contrary to Reason. What follows, is,

Binding of Blood.
§. 31. I SPEAK of this Evacuation so circumstanced, as to impair the Strength; for Women sometimes bring up that Blood by the Mouth, which they ought to discharge by the Womb. Such an Evacuation in them is not to be stopped, unless it be greater than otherwise it used to be by the inferiour Parts: For unless it be greater, it will not diminish the Strength; but if it be greater, it falls within the Compass of this Disease: and after it is over, the same Method must be

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be used as against a Suppression of the *Menses*.

§. 32. *RIVERIUS* has given the Signs of Blood thrown up by Vomiting; and if these Symptoms depend upon a Fault of some of the *Viscera*, as for instance, the Pressure of aitchirrous Liver, after that Fault is removed, the Vomiting will cease.

§. 33. I WOULD also have it taken notice of, that we shall here have regard to the Cure of all kinds of Excretion of Blood, whether it be by the Kidneys, or the Lungs, or the Hemorrhoidal Veins, or Nose, or Fundament, or any other Part. And since there is no necessity of enumerating the Causes of Hemorrhages, there will likewise be no necessity to enumerate the Causes of vomiting up Blood, because they may be found in *Riverius*.

§. 34. WHEREFORE for a Cure, Blood ought first to be taken away, not in a great Quantity at once, but repeated several times; and it is of use in letting Blood in these Cases, to stop the Orifice frequently with the Finger, and then let a little Blood flow out again: Nay, I have seen a critical Hemorrhage by the Nose in a Fever, when it grew too large, abate by bleeding in the Arm after this manner, when no other Remedies would take place, and that to the restoring the Patient's Health.

§. 35. BUT whatsoever be the Cause of this Disease, some Blood ought to be drawn away, from

from the Necessity and Advantage of Revulsion. Nor is it true, altho affirmed by many, that *Phlebotomy* is of no advantage, when sharp and more fluxile Blood is the Cause of a Hemorrhage: for even then opening a Vein in a distant and opposite Part will occasion the Blood to flow in a lesser Quantity, and with a lesser Velocity, all that time to the Part where the Hemorrhage is: by which means, time will be allowed for the use of other Remedies, and the conveying them to the Part affected.

§. 36. AFTER bleeding in the Arm, or rather in the Foot, if the Hemorrhage be in the Nose, Lungs, or Stomach, the pouring of any cold Liquid from on high upon the naked Shoulders or Arms of the Patient is an excellent Help, and in my account preferable to bathing in cold Water; which yet is very beneficial to many.

§. 37. IF the Patient is not plethorick, or if the Blood is not vitiated when the Hemorrhage ceases, then gentle purging *Hydragogues* are of service: But if a Hemorrhage is continual, then, laying aside Catharticks, those things are to be administer'd which constrict the Vessels, or diminish by some means or other the Velocity of the Blood; and especially by giving a certain Grossness or Viscidity thereunto.

§. 38. FIRST of all therefore, the Juice of *Ground-Ivy*, or *Plantain*, or of the greater

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ter *Comfry*, or of *Nettles*, or of *Tarrow*, or of *Knotgrass*, or of *Shepherd's Pouch*, should be given by Spoonfuls, three or four times in a Day, made palatable with Sugar, that is, in case it be distasteful to the Patient without it; and always with the Addition of half a Grain at least of *Sugar of Lead*, or purify'd *Nitre*: for they who give these Juices without either *Sugar of Lead*, or purify'd *Nitre*, are much wanting both to themselves and their Patients. Also in all the common Drink, half a Scruple of purified *Nitre* is to be mixed. Or it may be sharpen'd with the *Phlegm* of *Vitriol*, or with *Wine-Vinegar* undistilled.

§. 39. PRACTITIONERS in this case commend, and that justly, *Iron-Water*; that is, such as has had red-hot Iron often quenched in it.

§. 40. IT will also be of service to give half a Scruple of *Steel*, twice a Day, in *Syrup of Coral*; drinking after it *Tincture of Roses*, made with dry *Roses*, and *Smith's-Water*, with a little Oil of *Vitriol*.

§. 41. IN the mean time let this Julep be given by Spoonfuls every Hour.

‘ TAKE of Frog-Spawn-Water two Ounces and an half; Water of *Roses*, and Corn-Poppies, of each one Ounce; Blood-stone, half a Scruple; *Dragon's-Blood*, twenty five Grains; Juice of Citrons, half an Ounce; *Syrup of Coral*, one Ounce and a half.’

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§. 42.

§. 42. SINCE *Electuaries* are nothing else but many Powders made up with *Conserve*s and *Syrups*, in their stead (besides the Steel above prescribed) may be given half a Dram of *Sperma Ceti*, in *Syrup* of dry'd *Roses*, or white *Poppies*, or *Comfry*, or Juice of *Quinces*.

§. 43. IT was said, that in Intervals *Catharticks* might sometimes be prescribed; if therefore there be a vomiting of Blood, let this *Powder* be premised.

‘TAKE *Sperma-Ceti*, and fine *Rhubarb* powdered, of each half a Scruple; *Troches* of *Carabe*, and of *Mummy*, each seven Grains: let it be given in *Syrup* of *Myrtles*.’

GOING to rest at night, let an *Emulsion* be provided with the four greater cold *Seeds*, the *Seeds* of *Purslain*, purify'd *Nitre*, and *Sal Prunella*, two Scruples; and sweeten'd with *Syrup* of the Juice of *Quinces*. Then in the Intervals give the following *Potion*:

‘TAKE *Tamarinds*, two Ounces; *Spring-Water*, in which *Sorrel*, and red *Rose-Leaves* have been boiled, four Ounces: boil together, and in the expressed *Liquor* infuse half a Dram of *Rhubarb*; one Dram of *Sena*, and strain: to the strain'd *Liquor* putting a little *Syrup* of *Marshmallows*, or of *damask Roses*, or of *Peach Blossoms*.’

§. 44. But if the Hemorrhage frequently returns, especially in the Stomach, then give the following *Mixture*:

‘1. TAKE

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1. TAKE of the Decoction of Nettles
' and Ground-Ivy, each one Ounce and a
' half; Vinegar, one Dram and a half; Cam-
' phire, Grains six; Syrup of Pomegranates,
' half an Ounce: mix for two Doses.' Or,

2. TAKE of Oxycrate, made with one
' part Vinegar, and two parts Water, two
' Ounces; Juice of Lemons, half a Dram;
' Sugar of Lead, four Grains; Salt of Worm-
' wood, one Scruple; Argyl calcined to a
' Whiteness, fifteen Grains; Syrup of the
' Juice of Plantain, one Ounce: mix for two
' Doses.'

BUT always let the following Mixture be
in readiness.

3. TAKE Juice of Yarrow depurated,
' four Ounces; Cinnamon-Water, and Spirit
' of Wine, each two Drams; Laudanum,
' Grains three; Blood-stone, Grains twenty
' five; red Coral prepared, one Scruple; Sy-
' rup of Corn-Poppies, one Ounce.'

THIS is to be given by Spoonfuls, as
there is occasion, if the former does not take
place.

§. 45. LASTLY, where the Hemorrhage
is from the Stomach, and is at last stopped,
then at greater Intervals let Whey made with
Goat's Milk, or the Milk itself, be given for
common Drink. But if the Hemorrhage a-
rises in the Stomach from drinking *French*
White-Wine, or Wine that is eager, or four
S Beer,

Beer, then the medicated *Acidula* will hardly ever fail in answering expectation.

§. 46. SUCH external Remedies, as wrapping up the Privy Parts in Clothes wet with *Oxycrate*, the Steam of Swines Dung with a red hot Iron in it, defenſative *Plaſters*, and the like things, moſt practis'd amongst Nurſes, may be met with in *Riverius*.

§. 47. NEXT follow the Symptoms of a *Stomach too empty*. But firſt of all I would have it obſerved, that a *Lientery* is on purpoſe not mentioned amongst them, becauſe that is a compounded Diſeaſe, conſiſting of an *Apepſy*, and a *Diarrhea*; and therefore its Cure will be more properly and more fully handled under that of a *Diarrhea*.

II. Of the Diſeaſes of the Stomach too empty.

§. 48. THE Symptoms of the Stomach too empty, are, a *canine Hunger*, *Longing*, and a depraved Appetite, and inordinate Thirſt.

§. 49. ALL Hunger is from an empty Stomach; for the Senſe of Hunger ariſes from the contracting the Sides of the Stomach together, when nothing interpoſes, into mutual Contact. From whence the more free that Contact is, or the leſs the Coats of the Stomach are cover'd, the greater will be the Hunger.

Longing,

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Longing, and a depraved Appetite.

§. 50. THE Definitions of these, seek for in *Riverius*. They are nothing else than an increased Appetite, or a canine Hunger, or a *Boulimy*, with a *melancholy Delirium*.

§. 51. ALL this will be made appear from hence, that the Use of those things which lessen the Viscidity of the Stomach, or its *Mucus*; or of those things which purge too much, or in any other manner evacuate and irritate; do occasion an inordinate or canine Hunger. And if Acids at any time excite Hunger, all Viscidity must be removed, because that destroys the Sense of Hunger, by hindering the Stomach's immediate Contraction and Contract. But without a Viscidity an Acid may be fixed in the Stomach, and a very powerful Acid too; which is sometimes the Case in acute Pains. And a powerful Acid may be in the Stomach from the Food which is eat or drank, some Part of it growing sour there; which notwithstanding, no otherwise excites Hunger, than by an Irritation of the Fibres, whereby the Sides of the Stomach are drawn together: so that if any other thing that is not an Acid, can in a small Quantity cause such a Contraction in an empty Stomach; by the same means it would produce Hunger. And this is so true, that if any greater Quantity, even of an acid Liquor, be contained in the Stomach, which prevents its Sides being

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brought

brought together by Contraction, there will thereupon arise no Sense of Hunger.

§. 52. WHEREFORE whatsoever occasions the Sides of the Stomach to be brought into contact, will cause Hunger; and that being encreased, a canine Hunger ensues: and thence, in conjunction with a *Delirium*, a longing or depraved Appetite.

§. 53. THE modern Physicians prescribe in this case whatever blunts Acidity, as fixed Salts, Mucilages, and all fat and oily Substances; the Effects of all which are hindering the free Contact of the Coats of the Stomach: wherefore, according to their Example, we also direct such things as are viscid, and remain longest in the Stomach.

§. 54. FOR ordinary Food, therefore the Gelly of *Hart's-horn*, and the Broths of glutinous Meats, are of service.

§. 55. BUT for Drink, *Spanish Wine* and *Canary*, taken moderately, are most advisable; and especially *Brunswick Beer*, or *Dutch Mead*, made with six Parts Water, and one Part Honey.

§. 56. IT is not to be wonder'd at, that we have enumerated *Longing* amongst the Symptoms of an empty Stomach; notwithstanding Experience teaches us, that it often arises from a Suppression of the *Menses*, or some other like Cause. For such Suppression does not excite Hunger, but only joins to it a *Delirium* when produced from some other Cause, by means

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means of an encreased Quantity of Blood in the Brain, that is viscid and slow of Motion; such as it generally is in Women under uterine Obstructions: from whence the Nerves are more rigid, and from which Rigidity proceeds the *melancholy Delirium*.

§. 57. A LONGING is therefore to be cured in the same manner as a *Delirium* and a depraved Appetite in the same manner as a Longing.

§. 58. PAIN is also enumerated amongst the Diseases of the Stomach, but the Cure of this we shall refer to the Diseases of the Intestines, because of the Affinity of their Causes; for it is commonly from the same that they both arise: and Pain in the Intestines is more obstinate than in the Stomach.

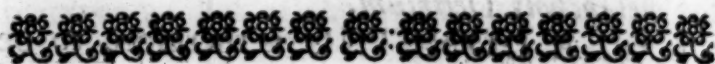
§. 59. I AM aware, that by some has been denied the Possibility of an *Abscess*, or *Ulcer* in the Stomach. But I have known an Ulcer in the Stomach to have been cured by often taking *Turpentine*, and drinking *Sarsa* Decoction for some Weeks together. It now remains, that we direct the Cure of an

Inordinate Thirst.

A PRODIGIOUS Task! for I mean an inordinate Thirst without a Fever.

§. 60. IN this case Practitioners prescribe Whey, Water with acid Juices, and particularly with purify'd *Nitre*. But before all things, I recommend *Blood-letting*; and then

the *Decoction* of *Mallows*, *Marshmallows*, *Flowers* or *Husks* of *Violets*, and *Flowers* of *Borrage*, made in common *Water*: or rather a *Tincture* of *red Roses*, and *Emulsions* of the four greater cold *Seeds*, and sweet *Almonds*.



C H A P. XIX.

Of the Diseases of the Intestines.

§. 1. **A**LL Diseases of the Intestines are Symptoms of *Fullness*; that is, by a Protrusion of somewhat upon the Bowels, which ought not to flow thither, as in a *Dysentery*, and a *Diarrhea*, of the Gall and internal Hemorrhages; or by a Retention of somewhat which ought not to be retained, as in a *Lientery*, a *Celiac Flux*, *Worms*, the *Iliack Passion*, and too great an *Adstriction* of the Bowels: for a *Cholick Pain* is of the same kind with the Pain of any other Part.

I. *An Adstriction of the Bowels.*

§. 2. **T**HIS differs not but in degree from the *Iliack Passion*, and therefore we shall consider of their Cure together: For if little or nothing is ejected downwards, and the Excrements are brought up by the Mouth, even so much as a Clyster, it is then the *Iliack Passion*;

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sion ; but if nothing comes upwards, then it
is an *Adstriction of the Bowels*.

II. The Iliack Passion.

§. 3. THE Iliack Passion is either an Effect of Vomiting, or a Reaching to vomit ; or of an Obstruction of the Bowels, when the *Fæces* are not discharged ; or it arises from a *Lentor* of the *Fæces*, or their Quantity ; or from a painful Twisting of the Guts.

§. 4. FOR the Cure of that kind which proceeds from too violent a reaching to vomit, let a Cataplasm with *Mithridate*, *Diaf-cordium*, Powder of *Cinnamon*, Oil of *Mace*, and Confection or Syrup of *Kermes Juice*, be applied to the Pit of the Stomach, and over the Navel ; or let a Toast dipped in red spiced Wine be apply'd to the same Parts ; or let a Sheep's Caul hot, or a live Whelp, be used to the same.

§. 5. THEN let that celebrated Remedy of *Riverius* be given inwardly ; viz.

‘ TAKE Salt of Wormwood, one Scruple ; Syrup of Lemons, half an Ounce :
‘ mix them together.’

BUT I always advise half a Grain, or one Grain of *Laudanum*, to be dissolved in a little *Mint-Water*, and added thereunto. And these things only, or such as are of the like kind, ought to be administer'd in the *Iliack Passion* of this first sort.

§. 6. IF the *Faces* are harden'd, or obstructed by any other Cause, so as to have been the Rise of this Disease, then other things are to be done. And first an emollient Clyster of the Oils of *Camomile*, sweet *Almonds*, *St. John's Wort*, or the like, is to be injected; and then another made with the common emollient *Decoction*, or fat Broth, to which may be added two Ounces, or more, of turbid *emerick Wine*: And by the Mouth may be given *Manna*, with Oil of sweet *Almonds*, which often does service when more powerful Medicines fail. And afterwards a laxative *Ptisan*, with an Infusion of *Sena*, may be given with more Safety and Efficacy; which may be taken often, and in any Quantity. The last with Remedy is said to be crude *Mercury*, to be taken to the Quantity of some Ounces, or some Pounds at a time, and afterwards the Patient to be exercised in a Chariot.

§. 7. BUT if it appears that this Disease had its Rise from an Obstruction of the *Faces*, either by means of their Quantity or Consistence, then I advise to administer the most strong Purges, to be taken downwards; and in the mean time let the Patient's Belly be appointed with *Sow-Bread Ointment*. Nor is there occasion to be concerned about Vomiting; for vomiting with a full Stomach (some thin Liquid being to be frequently drank upon a Cathartick Medicine) will forward Dejections by Stool, by the Compression of the Abdomen.

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men : for which reason, if other means will not do, and the Strength is yet good, I order an Emetick.

§. 8. AND it is manifest, that these Means will still be more prevailing in removing an Adstriction of the Bowels.

III. *Of a Diarrhæa, Lientery, and the Cæliack Passion.*

§. 9. SETTING aside the Differences and Definitions of these Diseases which are to be met with in *Riverius*, and other practical Physicians ; I affirm, that the two last may be included in the first : for the former of them is from an Apepsy, and the other, when curable, (for the Cæliack Passion, arising from a strumous Obstruction, can no more be cured, than a Person can be nourished who wants a Mouth) is from a certain tough Matter adhering in the Intestines about the Apertures of the Lacteals. For what some advance, that an Abraction of the natural *Mucus* of the Intestines is the reason why the Chyle cannot be filtrated through, has no Credit with me ; for the Chyle is not filtrated, nor is there properly any such thing as Filtration in an animated Body.

§. 10. WHEREFORE a *Lientery* is cured by all such means as take away an Apepsy ; and the *Cæliack Passion* by those things which gently purge, and that by their Quantity

tity more than by the Force of their *Stimulus*: such as are the medicated Waters, or Salt of Tartar diluted with a great deal of Water. For in these Cases are retained what ought not to be retained in the Bowels, that is, a milky Substance that ought to be convey'd into the Lacteal Vessels.

§. 11. IT remains therefore, that we lay down the Cure of a *Diarrhea*. Every *Diarrhea* is either from an Accumulation of Matter in the intestinal Tube, and there putrefying from the same Causes, as it would have putrefy'd in any warm Air; or from Matter derived out of the Apertures of the *Hepatick* or *Pancreatick Ducts* enlarg'd beyond their usual Dimensions: which is occasioned from an Obstruction of insensible Transpiration, the urinary Discharges, or the like, whereby there is an encreased *Impetus* of a greater Quantity of Fluid against the Sides of those Apertures, stretching them and widening them on all sides; which Fluid must pass off, because if it did not, a Fever would ensue.

§. 12. IN this latter sort of a *Diarrhea*, we ought greatly to fear least a *Dysentery* follows it; and then therefore the same means are to be made use of, as ought to be used in a *Dysentery*: because an Aperture of the Vessels, but a little further encreased, would let out the Blood it self. And in this kind of a *Diarrhea* likewise we must always endeavour to restore insensible Transpiration to its natural State,

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State, doing all other things notwithstanding, as before directed.

§. 13. WHEREFORE mild Sudorificks are first to be given, and then such as are more efficacious; amongst which the *Theriaca-lia* and *Opiates* are best in this Case. But it must always be observ'd whether a *Diarrhea* is not accompanied with a Fever; for particular Regard must be had to that: not because it varies the Cure, but because it gives a greater Certainty in the Cause of a *Diarrhea*; for if it has a Fever with it, both that and the Fever are from one common Cause: As, for instance, from the Suppression of some Evacuation, which being restored to its natural State, will remove both the Fever and the *Diarrhea*.

§. 14. FOR it is to be observed, that the thick Secretions cannot be encreased, but the thinner must be diminished before, or at the same time: and therefore a *pituitous*, *watry*, *bilious*, or a *greasy Diarrhea*, have all one and the same Cause, that is, a Defect in the cutaneous Evacuations, and require all one and the same Method of Cure. And indeed these Distinctions are to no purpose: for a *bilious Diarrhea* is an imperfect *Cholera*; a *pituitous* and the *serous* differ but in Name; and the *greasy* one is only when some Matter comes away in the Shape of Fat, which generally does in all large *Diarrhaas*.

§. 15.

§. 15. BUT it is evident, that every Disease which abates upon a *Diarrhea*, had its rise from the same Matter, which such a *Diarrhea* discharges: Whence it follows, that a *critical Diarrhea* ought not to be stopped.

§. 16. THEREFORE a *Diarrhea*, that requires to be stopped, is always *symptomatical*; that is, such a one as does not lessen the Distemper to which it is joined: for since the most healthful of us may secretly be ailing, a *Diarrhea* happening when we appear most well, ought to be esteemed the Consequence of some other Disease, and to be a Symptom thereof; because when it happens to seemingly sound Persons, it cannot be said to carry off the latent Distemper, by reason it renders the Person worse.

§. 17. WHEREFORE, since all Purging proceeds from some *Stimulus*, that is, somewhat that brings Pain; if this Quality resides in the Matter adhering to the Bowels, it ought to be carried off by some artificial *Cathartick*: for if such Matter was not adhesive, it might be washed off only with plentiful *Diluters*.

§. 18. IN every *Diarrhea* therefore proceeding from a viscid Matter in the Intestines, *Purging* is in the first place necessary. With these Medicines Practitioners always mix *Astringents*; but I approve not of their Custom, unless the *Diarrhea* be violent: for to a slow one it is not proper. In the first Case
then,

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then, Purging may be directed with a Ptisan of the following kind :

‘ TAKE Sena Leaves, two Drams ; Rhu-
‘ barb, one Dram ; Plantain Leaves, half a
‘ Handful ; Sal Prunella, two Scruples : boil
‘ them in ten Ounces of clear Water, or that
‘ which has had Iron quenched in it ; let the
‘ strained Liquor be given at one or two Do-
‘ ses in the same Day.’

OR give the following Pills :

‘ TAKE of the Ecphractick Pills, half a
‘ Dram ; Laudanum, half a Grain : mix.’ Or,

‘ TAKE the same Quantity of the Ca-
‘ thartick Extract, with seven Grains of Salt
‘ of Steel made into Pills.’

§. 19. BUT if the Matter occasioning a
Diarrhæa proceeds immediately from the Mass
of Blood, thro the hepatick or pancreatick
Ducts, or from a Suppression of some of the
thinner Secretions, or from an augmented
Quantity of the thicker Parts of the Blood,
then all Means are to be tried for raising a
Sweat ; by drinking *Decoctions* of *Guaiacum*,
Juniper, *Box*, *Sassafras*, and the like, in Wa-
ter ; or in Water and *French Claret* : in the
Evening taking a Bole, with *diaphoretick An-
timony*, *volatile Salt of Hart's-Horn*, *Extract*
of Gentian, *Diascordium*, *volatile Salt of Am-
ber*, &c. Or, that there may also the more
successfully be promoted a plentiful Discharge
by Urine, let *Decoctions* be drank with Roots
of *Grass*, and *Parsley*, boiled in clear Water
with

with *Sal Prunella*; or, which is better than all others, with *Camomile-Flowers* boiled in salted Water.

§. 20. IN the Evening give from ten to thirty Drops of *Helmont's liquid Laudanum*, and then *Astringents*. But because *Astringents* which are required for a *Dysentery*, are of the stronger sort, and consequently also sufficient for a *Diarrhæa*, we shall therefore pass to that Head, and not repeat them twice.

IV. Of a *Dysentery*, and the *Hemorrhoids*.

§. 21. THESE include the internal Bleeding of the Piles, and a Profusion of Bile; which proceed either from the *Hepatick Vessels* being too much enlarged, or from an Enlargement of the *Pancreatick Ducts*: the Causes and Cure of which are the same.

§. 22. FOR first in every *Bloody-Flux* of the Belly, Blood is to be taken from the Arm, for Revulsion, and to favour the Operation of Medicines given inwardly at the same time.

§. 23. BUT (unless a *Dysentery* has its Origin from a tenacious Matter gnawing the Bowels; for then we must purge, as before directed in a *Diarrhæa*) all Purging must be avoided, and recourse had to things which *astringe* and *incrassate*.

§. 24. WHEREFORE three times in a Day give half a Dram, or two Scruples, or one Dram of the following Electuary.

‘ TAKE

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‘ TAKE Powder of Agrimony-Leaves
‘ dry’d, of Yarrow Seeds, Conserve of red
‘ Roses, and Marmalade, each one Ounce
‘ and a half; Venice-Treacle, half an Ounce;
‘ Troches of Carabe, according to the Lon-
‘ don-Dispensatory, Rhubarb, and Nutmegs,
‘ each one Dram and a half; Salt of Worm-
‘ wood, *Species Diarrhod. Abbatis*, each one
‘ Dram; and with the Syrup of the Juice of
‘ Plantain, and a little Cinnamon-Water, make
‘ into an Electuary.’ This is of wonderful
Efficacy.

§. 25. OR let two Spoonfuls of the fol-
lowing *Tincture* or *Infusion* be given three
times in a Day.

‘ TAKE Diascordium, half an Ounce;
‘ Rhubarb, two Drams; Bole, six Drams;
‘ Tormentile-Roots, three Drams; Oak-Bark,
‘ and Argyl calcin’d to a Whiteness, of each
‘ one Dram; Plantain Leaves, two Drams:
‘ let them steep a whole Night in one Pint of
‘ Spirit of Wine, and four Ounces of Mint-
‘ Water; adding to the strain’d Liquor, two
‘ Ounces of Syrup of Corn-Poppies.’

§. 26. *DIASCORDIUM* alse with Salt
of Wormwood, will be sufficient with many in
an Epidemical Dysentery. And I have often
seen the following Medicine of *Horstius* gi-
ven with Success.

‘ TAKE Conserve of red Roses, one
‘ Ounce; Plantain Seeds roasted, half an
‘ Ounce; Burnt Hart’s-Horn, the astringent

‘ *Crocus*

‘ *Crocus* of Iron, and sealed Earth, of each
 ‘ one Dram; Syrup of Quinces, a sufficient
 ‘ Quantity to make into an Electuary.’

§. 27. BUT some *Liquid Laudanum* ought
 always to be mixed with *Electuaries* against a
 Dysentery; or I order the *Tincture of Diascor-*
dium, or the following *Mixture*.

‘ TAKE of Frog-Spawn Water, and Mint
 ‘ Water, each three Ounces; *Diascordium*,
 ‘ two Drams; *Laudanum*, three Grains; Salt of
 ‘ Wormwood, one Scruple; Syrup of Cloves,
 ‘ a sufficient Quantity to make it grateful,
 ‘ and let it be given by Spoonfuls.’

§. 28. THE following Powder of *Timeus*
 is also extraordinary serviceable.

‘ TAKE burnt Hart’s-Horn, and Tor-
 ‘ mentile Root, of each half an Ounce;
 ‘ sealed Earth, two Drams; Bole Armoniack,
 ‘ Blood-stone, red Coral prepared, Pomegra-
 ‘ nate Bark, Balauftines, and red Roses, of
 ‘ each one Dram; Mastich, four Scruples;
 ‘ white Gum Tragacanth, two Drams; make
 ‘ one Scruple a Dose, two or three times in
 ‘ a Day.’

§. 29. THEY who would rather have
 Pills, may take the following, which have of-
 ten been experienced by myself.

‘ TAKE astringent *Crocus* of Iron, red
 ‘ Coral prepared, and Blood-stone, of each
 ‘ half a Dram; Sugar of Lead, fifteen Grains;
 ‘ Balsam of *Tolu*, two Drams; Syrup of the
 ‘ Juice of Plantain, a sufficient Quantity to

†

make

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‘make them into a Mass for Pills.’ Out of every Scruple of which let there be five Pills for one Dose, to be taken in a Morning, and repeat the same in the Evening. The Quantity of Sugar of Lead may herein be augmented, and every other Night *Laudanum* be added thereunto.

§. 30. I SAID that Catharticks are not to be given in a Dysentery, unless a tough adhesive Matter in the Intestines were its Cause; which may be known by the Slimyness and Viscidity of the Stools: for more especially in such a Circumstance, and if the Distemper be violent, Purges are necessary; and we always find such Patients to become better after Purging.

§. 31. LET the *London white Decoction* be given for the ordinary Drink: as,

‘TAKE Hart’s-Horn, calcined to a Whiteness, one Ounce; boil it in Spring-Water from three Pints to half the Quantity, or to two Pints: let it be strained through a fine Sieve, otherwise the Powder will go through with it: and then add white Sugar, one Ounce.’

OR, rather, where there is a Fever, the following.

‘TAKE Bark of Guaiacum, half an Ounce; infuse it a whole Night in four Pints of Spring-Water, and then boil it to two Pints: at the latter end adding of red Roses, Shepherd’s Pouch, and Plantain, of each

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‘half

‘ half a Handful; sliced Liquorice, two Drams;
 ‘ and strain it for common Drink.’

§. 32. THE *Tincture* of *Roses* itself, made without an Acid, is in this Case a very good Medicine. Some suitable Ingredients may moreover be boiled in Broth: As,

‘ TAKE Bistort, and Tormentile Roots,
 ‘ of each half an Ounce; Shavings of Hart’s
 ‘ Horn, three Drams; Isinglass, one Dram;
 ‘ mix, and boil in Veal-Broth, to two Pints,
 ‘ which let be drank two or three times in
 ‘ a Day.’

§. 33. LASTLY, when all other things fail, and the Cause is chiefly in the Intestines, let ten, fifteen Grains, or a Scruple, of *Mercurius Dulcis* be given in Conserve of red Roses, with or without *Rhubarb*; and it is an extraordinary Medicine, if it be frequently repeated.

§. 34. NOR is in this Case to be neglected the use of *Clysters*. I have seen a *Dysentery* cured by *Clysters* of Milk; and often by one made with Broth of Sheep’s Guts; and once an extraordinary Instance of a Canary *Clyster*.

V. Of Worms.

§. 35. THE Cause of a *Diarrhea* and a *Dysentery* is often a Vellication from *Worms* in the *Intestines*: Concerning their Differences, consult *Riverius*.

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§. 36. THE true Method of Cure is by Purging; and first of all with the *Cornachine Powder*, or the *Powder Diasena*. Then some *Worm-Powder* may be prescribed, amongst which that of *Timæus* excels.

‘ TAKE of Wormwood-Seed and Worm-Seed, each one Ounce; St. John’s Wort, two Drams; Citron Seeds, one Dram and a half; Male Fern Root, and Flowers of Tansey, of each three Drams.’ The Dose is one Scruple, or half a Dram. *Timæus* himself added two Drams of calcined Vitriol, which I rather leave out.

§. 37. BUT after the Body is in some measure cleansed by Purging, it will be much more to advantage to give *Merc. Dulcis* inwardly, suiting the Doses to the Patient’s Age, for three or four Days together, and then purge. But if the Patient is too young for taking *Mercurius Dulcis* (which indeed is never the Case) then live *Quicksilver* may be infused in *Tansy-Flower Water*, or Spring-Water, in any Quantity, for a whole night together, over a very gentle Heat; and a Spoonful of such Water may be frequently given sweeten’d with Sugar: or often pour *English Tin* melted into Water, which may be given in the same manner. There remains,



VI. Cholick Pains.

§. 38. THESE, if they are neither *Nephritick* nor *Hypochondriack*, are of no long Duration; and therefore it is not necessary that we should enlarge thereupon; for it will always be sufficient in such a Case to drink a Decoction of *Camomile* Flowers in *Spanish* Wine: as for Example,

‘ TAKE *Camomile* Flowers, one Pugil;
 ‘ boil them in four Ounces of Wine, and in
 ‘ the hot Liquor strained, dissolve one Scruple of Oil of *Nutmegs* made by Expression.’

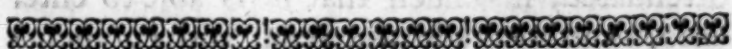
THIS may be given in one or two Doses with Success.

§. 39. WHEN the Pain continues long, and the Patient is subject to *Hypochondriacal* or *Hysterick* Passions, it will be convenient to prescribe the *Anti-Hysterick* Julep with *Laudanum*.

§. 40. BUT if the Patient requires no other Medicines except such as are directly calculated against the *Cholick*, then it will be proper to have recourse to the *medicated Waters* impregnated with *Steel*, and *Nitre*: of the *Antients*, that is, a *Species* of *Sal Volatile*: For these drank plentifully, wash off by their Quantity and Weight that viscid *Mucus* that adheres to the Bowels; and by their opening, that is, inciding Quality, wear away what is
 the

the Cause of the Pain. Such Waters may also be prepared at home.

§. 41. It may likewise be remarked, that *Riding* is necessary for those troubled with *Cholick Pains*, which alone will remove this Disease, and sometimes make an effectual Cure: from whence it is easy to conjecture what is the Nature and Cause of this Malady.



CHAP. XX.

Of the Jaundice, and a Schirrous Liver.

§. 1. **W**E have not here any regard to a *Jaundice* that is caused by the Bite of a mad Dog, or of a Viper; for such are cured by those Remedies that are proper against the Bites of such Creatures: nor to one arising from Anger, Hysterick Passions, Fevers, or sweating Medicines, given in too large Quantities; for in these the *Faces* are yellow, and the Bile is separated in the Liver, so that they are not Species of a right *Jaundice*: But to a *Jaundice* proceeding from an Obstruction of the bilious Passages, or of the first Roots of those Passages in the Glands of the Liver, by a viscous or gritty Matter; or also from a Compression of those Roots, from too great

a Quantity of Blood in the Branches of the *Porta*, or from an Inflammation of the Liver by Blood obstructing therein.

§. 2. IN this Circumstance of the Disease, the *Fæces* of the Intestines are white, and the Urine tinges any Linen dipped into it yellow: For although the Bile does not flow into the Bowels by reason its Passages are stopped, so as to colour the Stools, yet by circulating longer in the Blood, it becomes more attenuated, insomuch that it is able to enter into, and pervade the renal and cutaneous Vessels, which before it could not get thro by reason of their Smallness, and not any Inap-titude of Figure; for even then the Figures of its Parts are not altered: for it is real Bile that tinges the Skin and Cloths dipped in the Urine.

§. 3. ETMULLER objects to this Opinion, that if the Over-Quantity of Bile, which causes the Jaundice, arises from the Defect of its Secretion, then a Jaundice could not be removed by Medicines that are *saline, volatile, sharp, and bitter*; for these things would encrease the Quantity of Bile. But that Author is mistaken, if he thinks that these Medicines are given in order to encrease the Quantity of Bile; for they are given only to attenuate the Viscosity, and open the Passages for the Bile's Secretion: so that the Quantity of Bile in our Bodies may thereby be lessen'd.

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§. 4. WE said, a Jaundice is produced from Sand, or Slime, obstructing the Passages: and I add, that these being encreased in Quantity, occasion the Liver to be *schirrous*; which as it sometimes possesses only some Part of the Liver, it may for some time precede a Jaundice. Its Signs see in *Riverius*.

§. 5. IT is manifest, that Phlebotomy is not as necessary in the Jaundice, or a *Schirrus* of the Liver, as it is in many other Distempers; unless there be a Suspicion of an Inflammation, or there be a Suppression of some usual Hemorrhage.

§. 6. BUT it is very plain, that there is need of *Vomiting*, by which the Liver, and bilious Ducts, may be forced to shake out the obstructed Matter, by the Compressions of the Stomach and *Abdomen*; and there is also need of *Catharticks*, which for the most part operate upon the Liver: since the biliary Pipe is the principal Canal by which purging Medicines can derive any thing from the Blood into the Intestines; and therefore with them the Liver may be cleansed as with a Wash.

§. 7. FIRST of all therefore an *Emetick*, and that not a gentle one, is to be administer'd once or twice; then a *laxative Ptisan* is to be prescribed, with Leaves of *Sena*, and Salt of *Tartar*, for a day or two; or the *laxative Pills* of *Timeus*: And afterwards every night the following *Emulsion*.

T 4

‘ TAKE

‘ TAKE Seeds of Hemp and Columbines,
 ‘ of each one Dram; wild Carrot-Seed, one
 ‘ Dram and an half; white Poppy-Seed, three
 ‘ Drams: bruise them, and pour on clear Wa-
 ‘ ter, or a Decoction of Grass-Root, six
 ‘ Ounces: to the strained Liquor add six
 ‘ Drams of Syrup of Marshmallows, Treacle, and
 ‘ Cinnamon-Water, of each one Dram. Mix.’

§. 8. LET the common Drink be Whey,
 or rather a *Ptisan* with *Barley-Water*, *Sal*
Prunella, *Syrup of Violets*, and a little *Cinna-*
mon-Water.

§ 9. IN which *Ptisan* let one of the follow-
 ing *Powers* be taken three times in a Day.

‘ TAKE Millepedes prepared, and Chryf-
 ‘ tals of Tartar, each half a Scruple; to which
 ‘ may be added some Sugar. Instead of the
 ‘ Millepedes, Earth-worms may be used with
 ‘ advantage, prepared; that is, dried with the
 ‘ Sun, or in an Oven.’

§. 10. THE Leaves and Flowers of *Bor-*
rage, *Bugloss*, *Suctory*, *Strawberries*, and the
five opening Roots, may be serviceable in a *De-*
coction with clarify’d Whey.

§. 11. IN the mean time give the follow-
 ing *Pills*.

‘ TAKE of the Roots of Celandine the
 ‘ greater, long Birth-wort, and Madder, of each
 ‘ half a Dram; Rhubarb, one Dram; red
 ‘ Myrrh, and Dog’s Dung, of each two Scru-
 ‘ ples; Steel, half a Dram; Flowers of Sul-
 ‘ phur, one Scruple; Saffron, half a Scruple;
 ‘ Syrup

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‘ Syrup of the Juice of Hore-Hound, a sufficient Quantity to make into a Mass: out of every Scruple of which, let there be made five Pills, or six, to be given every Morning and Evening.’

§. 12. LET live *Millepedes* be bruised, and pour upon them *French White-Wine*, (or red, if the Patient is not accustomed to the other :) This strained may be drank with great Benefit; if requir’d, it may be sweeten’d with *Syrup of Violets*.

§. 13. THEY who cannot dispense with Pills, may take the following *Infusion*.

‘ TAKE Roots of Madder, Smallage, E-ring, and Dandelion bruised, of each one Ounce; Leaves of Liverwort, Agrimony, Strawberries, Spleenwort, and Violets, of each one Handful; Flowers of Broom, Rosemary, St. John’s-Wort, and Elder, of each two Pugils; Columbine Seeds, one Ounce; Saffron, one Scruple, white crude Tartar, six Drams; Filings of Steel, two Drams and a half; White-Wine, eight Pints: let them stand together for twenty four Hours, and give four Ounces of it every Day.’

§. 14. IT is a Secret with many to give Soap dissolved in Milk.

§. 15. BUT since this Disease is always most dangerous when accompanied with, or preceded by a *Schirrus* in the Liver, (which if ever to be removed, is to be done with the following, or the like) therefore
after

after the Administration of those things which we have directed for a Jaundice, let the right *Hypoconder* be fomented with a Decoction prepared in the following manner:

‘ TAKE Leaves of Mallows, Marshmal-
 ‘ lows, Wormwood, Flowers of Melilot and
 ‘ Camomile, of each one Handful; Leaves
 ‘ of Baum, Ground-Pine, of each half a Hand-
 ‘ ful; Fenugreek Seeds, one Ounce and a
 ‘ half: boil in four Pints of Water, adding to-
 ‘ wards the end, two Pints of White-Wine;
 ‘ and let the Side be fomented with it warm
 ‘ with woollen Cloths, Morning and Night.’

§. 16. THEN let there be laid upon it a Plaster composed of *Diachylon* with the Gums, and *Melilot Plaster*, softned with a little Oil of Earthworms: or with the *Hemlock Plaster* with *Ammoniacum*: or the *Frog-Plaster* with a triple Quantity of *Mercury*.

§. 17. BUT the best for common Drink, is a Decoction of *Sarsa* and *Guaiacum*, which is to be drank hot in the Morning for many Days together.

§. 18. IF these Means do not remove the Disease, we must then have recourse to *Mercurius Dulcis*, inwardly given. But most of those things which are hereafter to be directed against the *Hypocondriack Affection* will also be of service in this Distemper.



C H A P. XXI.

Of a Dropsy.

§. 1. **E**VERY Dropsy has its Origin from hence, 1. Either that the Blood being too viscid, for the serous Parts to flow thro the urinary or cutaneous Passages: Or, 2. That those Vessels being straiten'd from some Cause compressing, or stopping them, as the Stone in the Kidneys, so that they cannot admit the Serum, or give it passage thro them: Or, 3. Because by several considerable Evacuations of Blood, by Phlebotomy, &c. its Motion is become so languid, by a lesser Quantity of Spirits derived from a lesser Quantity of Blood, that it is not sufficient to carry the Blood to the cutaneous Passages with Force enough to make a Secretion there; and to prevent the Vessels from subsiding and adhering together: Or, lastly, 4. Because some usual Evacuations, or Passages necessary to the Blood's Circulations, are either suppressed, or compressed; from whence it is necessary, that those Vessels must burst, which are capable of receiving a viscid Fluid, and are yet very tender, such as are the *Lymphaticks*.

§. 2. IT is manifest, that this Disease does first require *Evacuation by Purging*. Amongst the
the

the Medicines of that Class, *Elaterium* in Pills, or Juice of common *Orrice-Root*, or *Dwarf-Elder* in Potions, are preferable.

§. 3. *ELATERIUM* may be given in *Ephraëtick Pills*, or the *Catholick Extract*, from two to five Grains, or upwards; beginning with the lesser Dose. I have often given three Ounces of the Juice of *Orrice*, with one Ounce of Syrup of *Buckthorn*, or with *Manna*, for one Dose.

§. 4. BUT once Purging in this case will signify but little; *Catharticks* therefore ought to be repeated every other Day: and let the following *Powder* be given in some small Liquor in the Days free from Purging.

‘ TAKE Broom-Ashes, and Powder of Steel, of each half a Scruple; which mix.’
Or,

‘ TAKE Powder of Toads, dry’d in the Sun, or in an Oven, one Scruple; Tartar of Vitriol, half a Scruple: mix.’

§. 5. THE Use of those Pills will do service which are made of the *Chrystals* of *Silver* dissolved in Spirit of *Nitre*, exhibited to the Quantity of three or four Grains, in a Scruple, or half a Dram of *Pil. Cochie*, the greater or lesser. And instead of these *Chrystals* may with advantage be given *Mercurius Viridis*, or *Green Precipitate*; the Preparation of which may be seen in *Schroder*.

§. 6. ALL *Diureticks* and *Aperients* recommended against a *Jaundice*, are here also agree-

agreeable; as also all those things directed against the *Gravel* in the *Kidneys*.

§. 7. ALL *Sudorificks* are in this case eminently of service, if they but answer in raising Sweat: wherefore a Decoction of the *Sassa Root*, and *Guaiaacum Wood*, is of great advantage; as also all acrid *Antiscorbuticks*, and some *Aromaticks*, which dissolve the Viscidity of the *Serum*.

§. 8. BUT dry Baths are above all things of most use.

§. 9. IT may, perhaps, be worth our while to relate to you a certain empirical Cure made lately upon an *Hydropick*, who had both an *Anasarca* and an *Ascites*. They took Wormwood, Rue, Sage and Lavender, of each five Handfuls, and boiled them in some Gallons of Spring-Water; adding of common Salt, enough to make it almost like a Brine or Pickle: and in this they boiled a thick Cloth for some time; which being taken out of the Liquor, the Patient was wrapped in it, all but his Head; and he was so put to Bed in order to sweat for five or six Hours, or until his Spittle flow'd out like the Brine itself. He was then taken out of that Wrapping, and put into another hot Bed, where he again sweat for three or four Hours. In the mean time he drank *Spanish Wine*, which they plentifully gave him. And in the second Administration they added to the Decoction a large Quantity of Cow-Dung.

§. 10. AS *Purges* here do very great service; so after *Catharticks*, in this Disease, as also in all others which proceed from an Obstruction and Viscosity, *Steel* has very remarkable Effects; to which may added *Tops of Wormwood, Fir and Agrimony, Turmerick-Root and Aniseeds.* As,

‘ TAKE four Ounces of Steel, of the
 ‘ Tops of Fir and Wormwood, each one
 ‘ Handful; Centaury the lesser, and Elder-
 ‘ Flowers of each two Pugils; Cinnamon,
 ‘ two Drams: Infuse them in a warm place
 ‘ for six Days, in four Pints of white French
 ‘ Wine, so as to strain out three Pints. Let
 ‘ a Glas of it be drank in the Morning
 ‘ and Afternoon, taking a walk after each
 ‘ Dose.’

§. 11. THERE are some who tie a whole *Toad* dried to the Loins: but altho I have seen an Hemorrhage at the Nose, which would give way to no other Means but Bleeding, to stop immediately upon holding such a Toad in the Hand; yet how it should promote Secretion, I am at a loss, if it be only wore outwardly: This may however be tried.

§. 12. A DECOCTION of *Horehound* in *Smith's Water* is also of good advantage against all kinds of a Dropsy.

§. 13. BUT if a Dropsy be particular, as for Example an *Ascites*, those things will hardly ever succeed, and then only by chance; because there are no Passages for the extra-

vasated Serum to be evacuated by, or which, at least, are sufficient for that purpose.

§. 14. AND if a way is made by accident, the Disease will however return, by reason the Cause remains, that is, a Rupture of the *Lymphatick* Vessels. And in this case therefore the *Abdomen* ought to be opened by a *Paracentesis*, and the Water drawn out that way; not all at a time, because by so doing the Patient would immediately die, from a sudden falling of the *Diaphragm*, and the *Viscera* annexed thereunto, which before were held up by the Water. But how effectually soever the opening of the *Abdomen* may be performed, yet the Disease will return, because the Rupture of the Vessels continues; and therefore this kind of Dropsy may be pronounced *incurable*.

§. 15. BUT if a Dropsy arises from an Obstruction of the Blood-Vessels, preventing the Blood to return freely from the Arteries into the Veins, which *Lower's* Experiment proves may happen, then *Mineral Catharticks* ought more especially to be given, because of their Gravity and Moment; as also the Preparations of *Mercury*.



C H A P. XXII.

Of the Hypochondriacal Affections.

§. 1. **T**HESE have their Origin from a defective Commination of the Chyle and Blood in the Stomach, Lungs, and Spleen. But to the Stomach I reckon the *Colon*, which has frequently a greater share in these Maladies than the Spleen. The *Hysterick Passion* has also the same Origin.

§. 2: A DEFECT of this Commination occasions that Acid, which is observable sometimes in the Stomach and Intestines of hypocondriacal Persons; for nothing grows acid which is broke by continual motion, but that only which for want of Commination and Motion, stagnates or adheres.

§. 3. IF then the Blood that is less comminuted begins to accumulate in the Brain, and to move more slowly, the Parts secreted from it will have a lesser *Impetus*, and will excite Vibrations less vivid, and less frequent; and will thereby produce the Disease of Melancholy, after that Apoplexies, and sometimes Epilepsies.

§. 4. THEN by means of a more sparing Secretion of animal Spirits, from a thicker Blood, that is, requiring a longer space of Time to be secreted from a viscid Mass; the

Arte-

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Arteries and Heart will pulsate less frequently, and weaker: And from a *Lentor* in the Stomach and *Colon* will there be an Apepsy, Belchings, and Flatulencies; Symptoms altogether foreign to the Spleen.

§. 5. BUT in the Lungs there will arise a difficulty of Breathing, and Weight and Lassitude all over the Body; and more especially a Pain in the left *Hypoconder*, by the Spleen being sometimes distended, but oftner the Stomach, and most commonly the Colon. And when there is a Defect in the Communion of the Chyle, the *Fæces* will for the most part become more viscid, and a Costiveness of the Bowels must follow thereupon; which is common to Hypochondriacks.

§. 6. BUT it is to be remarked, that all the Symptoms of Hypochondriacks may be attributed to the Stomach and left Colon, except that enormous Pulsation which sometimes is observable, and which chiefly is to be accounted for from an Obstruction of the Spleenick Artery.

§. 7. THIS Affection, with all its Train of Symptoms, depends upon the Stomach, Colon, Lungs, and Spleen together; altho the Spleen has but a small share in this Disease, either in bringing it on, or in its cure; as it is manifest from those in whom the Spleen has been safely taken away, as I shall in another place more largely demonstrate. But there is one thing which I cannot pass by,

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That

That many Symptoms of hypocondriack and hysteric Patients, are *convulsive*; especially that, which is so common to both Sexes, of the Appearance of a Ball rising upwards through the Breast quite into the Throat, and there threatening Suffocation. This in Women has been thought to be the Rising of the Womb: but these Convulsions proceed from a Pressure made upon the Brain by some Arteries turgid with Blood not sufficiently comminuted; however not from such a Pressure, as would always hinder a reflux of the nervous Fluid, although this also sometimes happens, and in Women oftner than in Men.

§. 8. LASTLY, It is worth Observation, that the hypocondriack Affection is properly reducible to that Species of the *Scurvy* which they call a *cold Melancholy*; but *Willis*, *Salino-Sulphureus*, because in that Species the Salt seems, according to him, to predominate over the *Sulphur*: in which there happen no Ulcers or cutaneous Eruptions, but a straitness of the *Præcordia*, and a laborious Breathing, as may be seen in his Book of the *Scurvy*: and most certainly both the Rationale and Cure of hypocondriack and hysteric Affections, and the melancholy Scurvy, are the same.

§. 9. UNLESS some accustomed and necessary Evacuation of the Blood, being suppressed, gives Rise to this Disease, as a Defect of the *Menses* in Women, or a Stoppage of the *Hæmorrhoids* in Men, *Phlebotomy* is not

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to be used, but *Vomiting* is before all things to be provoked; for so the Supply of the Disease will be cut off. But it is very often necessary not to give the *Emetick Wine* to Females, but Posset-drink or warm Water, provoking it to come up again by putting a Feather down the Throat; which does very well with those, who cannot take the Wine without swooning.

§. 10. THE Patient is not to be treated with strong *Catharticks*, but with such things as just keep the Body open; for Hypochondriacks are not able to bear the more vehement Purges.

§. 11. AND lastly, all those things ought to be used, which either by their weight, as *Mercurials*, *Chalybeats*, and *Jovials*; or which by the smallness of their Parts, as *Diureticks*, and *volatile Antiscorbuticks*; are able to contribute to the necessary Commination of the Chyle and Blood.

§. 12. AS to the first, the Body is to be kept open with *Clysters*, which are in this case to be used upon a double account; both to malax the indurated *Fæces*, and to ease the Pains: and to both may be added, with advantage, the Wine in which has been infused the *Crocus Metallorum*.

§. 13. A CLYSTER for easing away costive Stools, may be made of the Urine of a healthful Man who is a Wine-drinker; or with a Pint of Water in which has been boiled one Dram of Colocynth, or half an

Ounce of Sena-Leaves, adding to the strain'd Liquor one Ounce of the Electuary of Bayberries, and Sal Gem half a Dram. But for easing Pains, it may be made with the Decoction of white Lilly-Root, Mallow-Leaves, and the Flowers of Mullein and Camomile; to half a Pint of which strain'd, may be added an Ounce of Oil of St. John's-wort, and one Ounce and a half of Catholick or Lenitive Electuary. Sometimes a Clyster with only Oil of Olives, Linseed, or Camomile, with a Dram, or a Dram and a half of Sal Gem, will answer both Intentions. But such a Clyster ought not to exceed six Ounces. A Pint also of Pease-Broth injected at a time, will be of service.

§. 14. THERE are many *Fomentations* made use of in these Cases, and commended for Aches of the Spleen, as they are called, which yet are more commonly the Cholick, or Hyfterical Affections. But before all things, I recommend to you the Anti-hysterick Plaster, or one of *Galbanum* alone, or with *Tacamahac*, to be apply'd to the left *Hypoconder*, and to the Navel. But take care, lest by Mistake the Epispastick Plaster be made use of instead of the Anti-hysterick, as I once knew it happen to a noble Lady in our Country.

§. 15. IN Intervals, but very rarely, Purg-
ing may be made use of; and the Potion which
I would commend, is:

‘ Take

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‘ Take one Ounce of small Currants, bruise
‘ them to the Consistence almost of a Pul-
‘ rice, and then boil them in a Pint and a half
‘ of clear Water, to strain out one Pint; in
‘ which, whilst it is yet warm, put half an
‘ Ounce of Sena-Leaves; Salt of Tartar, one
‘ Dram; Melilot Flowers, two Pugils; and
‘ let it stand a whole Night. Let four Oun-
‘ ces of the strained Liquor be given in the
‘ Morning for a Dose: and if it works not
‘ according to expectation, let as much be a-
‘ gain repeated in the Afternoon.’

§. 16. BUT frequently in this Case purg-
ing Pills are to be given to Hypocondriacks,
because of the Costiveness of their Bowels.
And of Pills, give those with the Catholick
Extract, or (which is better) the *Edinburg*
Ecphractick Extract, twenty-five Grains; or
the Stomach-Pills with the Gums according
to the *London-Dispensatory*, one Scruple;
adding thereto four or five Grains of *Diagri-*
dium; and then there will be no need of a
Regimen.

§. 17. AFTER once or twice purging,
Steel is to be given: In which Intention,
Lower's bitter Infusion will be of advantage;
which is,

‘ TAKE of the Tops of Wormwood and
‘ Centaury the lesser, of each three Pugils;
‘ Carduus-Seed six Drams; Gentian-Root one
‘ Ounce and a half, (but instead of the
‘ Gentian may always be made use of the

‘ *Peruvian Bark* ;) Filings of Steel, six Ounces.
 ‘ Let them be infused fourteen Days in three
 ‘ Pints of Alexiterial Milk-Water, the lesser
 ‘ compounded Wormwood-Water, according
 ‘ to the *London-Dispensatory*, one Pint; of
 ‘ the lesser compounded Spirit of Wormwood,
 ‘ according to the same, one Pint and a
 ‘ half. Let the Vessel be shaken three or
 ‘ four times in a day; and let it be strained
 ‘ as it is used. Four or six Spoonfuls may be
 ‘ given in the Morning upon an empty Sto-
 ‘ mach.’ The Alexiterial Milk-Water is as
 follows:

‘ TAKE Meadow-Sweet, *Carduus*, and
 ‘ Goat’s Rue, of each six Handfuls; Mint,
 ‘ and Wormwood, of each five Handfuls;
 ‘ Rue, three Handfuls; *Angelica*, two Hand-
 ‘ fuls: Let them be cut and bruised, and then
 ‘ pour upon them three Gallons of new Milk,
 ‘ and distil in a common Alembick.’ This
 Preparation of *Lower* ought to be continued
 in use for a Month together at least.

§. 18. BUT if this Disease is rather *Hys-*
terical, and the Belly is costive, the Patient
 restless, and the Menstrual Evacuation re-
 turns every four or eight Days from any
 slight Cause; then *Elixir Proprietatis* is to be
 given in a Morning, and in the Evening the
 Patient must take the following Pills.

‘ TAKE Galbanum and Myrrh, of each half
 ‘ a Scruple; Salt of Wormwood, six Grains;
 ‘ Laudanum, half a Grain; and *Elixir Pro-*
 ‘ *prietatis*

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‘*prietatis* a sufficient Quantity to make them
‘ into a Mass of Pills; out of which let se-
‘ ven be made for one Dose: but let the Lau-
‘ danum be omitted every other Night.’

§. 19. BUT because hysterical Persons can
seldom bear Wine, therefore let their com-
mon Drink be Whey, (unless any Inflamma-
tion of the Hypoconders forbids it) or Cen-
taury-Ale, in which has been infused such
things as operate by Urine, or dissolve Visci-
dities.

§. 20. Let the following medicated Drink
be therefore made by Infusion.

‘ TAKE of Centaury-Ale, forty-eight
‘ Pints; Root of Butchers-broom, Fern, Erin-
‘ go, Rest-Harrow and Madder, of each one
‘ Ounce; Leaves of Agrimony, Horehound,
‘ Water-Cresses, Violets, Strawberries, of each
‘ one Handful; Flowers of Sage and Rose-
‘ mary, each two Pugils; live Millepedes, a
‘ hundred and twenty; Cinnamon, and Grains
‘ of *Paradise*, of each one Dram.’ Let them
be infused together for three Days. And if
the Patient cannot use it for a constant Drink,
let him drink of it however three times
in a Day.

§. 21. AFTER the use of the Pills in
which Laudanum was to be mixed, let the
following be given.

‘ TAKE of Castor, Gum Ammoniacum,
‘ Sagapenum, and Salt of Tartar, each one
‘ Scruple; Steel, one Dram; volatile Salt of
‘ Amber,

‘ Ambër, half a Scruple; Tincture of Castor,
‘ or *Elixir Proprietatis* without the Acid, a
‘ sufficient Quantity to make into a Mass for
‘ Pills.’ Which may be made into forty in
number. Four, five, or six, may be taken
every Night going to rest.

§. 22. BUT if the Patient be a Man, then
these Pills may be more convenient.

‘ TAKE of Steel prepared with Vinegar,
‘ as directed in the *London-Dispensatory*, one
‘ Ounce, (altho the Steel prepared with-
‘ out an Acid, is preferable;) Gentian-
‘ Root picked, Crab’s Eyes prepared, and
‘ red Coral prepared, of each one Dram;
‘ Salt of Wormwood, two Scruples; Syrup
‘ of Steel, a sufficient Quantity to make them
‘ into a Mass for Pills.’ Out of each Dram
of which, let there be made twenty Pills;
five or seven whereof may be taken every
Morning, walking afterwards.

§. 23. THE Syrup of Steel is to be
made thus.

‘ TAKE one Ounce of Steel; of Nutmegs,
‘ and Cloves, each two Drams and a half:
‘ Infuse them in *French White-Wine*, or
‘ *Rhenish*, half a Pint, for two or three
‘ Weeks.’ Let the clear Tincture be reduced
into a Syrup without boiling, with a double
Quantity of white Sugar.

§. 24. THE place of all these may be sup-
ply’d with the *Chalybeat Waters*, and riding,
and walking.

§. 25.

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§. 25. I HAVE seen the following prescribed to a Youth of fifteen Years of Age, emaciated with an obstinate hypochondriacal Distemper, of two Years Continuance, with Success.

§. 26. FIRST of all he was vomited with Tops of the lesser Centaury, two Handfuls; boiled in three Pints of Spring-Water to two Pints: the Patient drank four Ounces of this with two Ounces of Emetick Wine, and one Ounce of Oxymel of Squills, in a Morning fasting; and half an Hour after two Pints of Whey at different times, which he immediately brought up again.

THEN he took as much of the Decoc-tion, Wine, Oxymel, and Whey, (or Posset-Drink) and eight Days after repeated the same.

§. 27. IN those Days wherein he did not vomit, he took the following Pills:

‘ TAKE Gum Ammoniacum, Myrrh, and
‘ Sagapenum, of each six Grains; Salt of
‘ Wormwood, four Grains; volatile Salt of
‘ Amber, two Grains; *Elixir Proprietatis*, a
‘ sufficient Quantity to make them into se-
‘ ven Pills, to be taken in the Evening every
‘ other night.’

§. 28. HE used ten of these Doses, and when he grew better, but not quite well, he took for three Nights successively seven Grains of *Mercurius Dulcis*. And after the third time he was purged with a Scruple of the *Esphrac-*

tick

tick Pills, to which were added five Grains of *Diagridium*. The Mercury was twice in this manner repeated, purging at the same Intervals.

§. 29. AFTERWARDS he drank for twenty Days together, in the Morning, the bitter Decoction without Sena; or sometimes the following, which is more simple.

‘ TAKE Camomile Flowers, two Pugils;
‘ clear Water, eight Ounces: boil to four
‘ Ounces, for one Dose.’

WITH these he was cured.

§. 30. THE following Infusion is to be recommended, because it is of service against a Nauseousness, and Hypochondriack Inflations with Pain.

‘ TAKE of Masterwort-Root, two
‘ Ounces; Horfe-Radish-Root, an Ounce and
‘ a half; Leaves of Mint, Pennyroyal, Beto-
‘ ny, Tops of the lesser Centaury, and Ca-
‘ momile-Flowers, of each one Handful; Ga-
‘ langal-Root, half an Ounce; white Ginger,
‘ two Drams; Mace, two Scruples; dry’d O-
‘ range-Peels, three Ounces; Steel prepared,
‘ eight Ounces; Mercury, eight Ounces: in-
‘ fuse them in eight Pints of *Spanish Wine*.’

After an Infusion of nine Days, he took a Draught of three Ounces upon an empty Stomach in a Morning, and at five a-clock in the Afternoon, and was cured of that Complaint.

§. 31. AND I remember also to have pre-
scribed with Success to an eminent Youth,
(who

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(who studying the Mathematicks and Philosophy with great Proficiency, at last became hypocondriacal, pale, melancholy, fearful, and despairing of his Life; he was torment-ed with a Pain in his Spleen, as he imagined, grew lean, and at last disturbed with a Giddiness, a Lothing, sour Belchings, a Singing in the Ears, and a Palpitation of the Heart :) as follows.

§. 32. HE was first purged with these Pills:

‘ TAKE of the Mass of Ecphractick
‘ Pill, with *Diagridium*, half a Dram; Gum
‘ Ammoniacum, Myrrh, and Salt of Tartar,
‘ of each one Scruple and a half; Aloes,
‘ Grains twelve; *Elixir Proprietatis*, a suffi-
‘ cient Quantity to make into a Mass, which
‘ is to be divided into twenty five Pills, eight
‘ of which are for a Dose.’

§. 33. THEN every night, after he had taken all the purging Pills, he took some-times seven, and sometimes five of the fol-lowing:

‘ TAKE Myrrh, Castor, Gum-Ammonia-
‘ cum, Amber finely powder’d, of each one
‘ Dram; Powder of wild Valerian-Root, one
‘ Dram and a half; *Peruvian* Bark, finely pow-
‘ der’d, and Filings of Steel, each three Drams;
‘ Salt of Tartar, half a Dram; volatile Salt
‘ of Amber, one Scruple; Laudanum dissol-
‘ ved in Treacle-Water, six Grains; Con-
‘ serve of Borrage-Flowers, half an Ounce;
‘ Syrup of *French* Lavender, or if that can-
‘ not

‘not be had, Syrup of Mugwort, a sufficient
 ‘Quantity to make into a Mass: out of each
 ‘Dram of which, let there be made fifteen
 ‘Pills.’

§. 34. THE Patient often smelled to Spirit of *Sal Armoniack*, and took besides once or twice in a Day, a Powder like the following.

‘TAKE Crab’s Eyes, and red Coral prepared, of each one Dram; burnt Hart’s-Horn, and burnt Ivory, of each one Scruple; and Pearl Sugar, the Weight of the whole: make into a Powder, to be divided into fifteen Doses.’

WITH these he grew well.



C H A P. XXIII.

Of the Scurvy.

§. I. I ACCOUNT those *scorbutick*, who have, *First*, Red, itching, and corrupted Gums, with a Looseness of the Teeth; so that they cannot be rubbed with the least Touch without Bleeding. *Secondly*, Spots, first red, then growing livid and black, infesting the Limbs; with an unusual Lassitude. *Thirdly*, Red and brittle Sand subsiding in the Bottom of the Urine, so that it is like a *Lixivium*.

vium. Fourthly, Wandring Pains; whence proceeds the running Gout, and shifting Tooth-Ach. Fifthly, An unequal Pulse, from weak and creeping, to be presently high. Sixthly, A *Phlogosis* over the whole Body; with a stinking Mouth. Seventhly, A Looseness of the Bowels of all kinds; that is, both with and without Blood.

§. 2. THE Cause of these Symptoms is an *intimate Breaking of the Blood*: The Nature of which Division some not rightly understanding, have called the universal Cause of Fevers, *A disturbed Mixture of the Blood*. For since an *intimate Breaking* of the Blood is such a Solution of some of its Parts, and a Separation of them from others, it comes about that the Secretions are in some places greater than natural, by means of a greater number of Particles, reduced, by such Separation, into a fit Size to pass the secretory Outlet; and by this it also happens, that the Blood breaks forth more easily: for in an healthful State, there is hardly any of the red Part so divided, that it does not in some measure cohere to some other Parts, either those which are red, or to those which are not; but by making a greater Division or Solution, they are parted asunder, so that one Particle may fall off thro an Outlet, where two Particles could not.

§. 3. BUT the Blood thus dissolved, necessarily takes up more Space; and therefore it presses upon the Nerves within the Brain more than

than usual : from whence there is a less Derivation of the animal Spirits thro them to the Heart and Muscles, and therefore the Pulse will be weaker, and there will be a Listlessness to Motion. And since the Motion of the Blood decreases in proportion to its Distances from the Heart, for the same reason therefore the Motion will grow languid about the Limbs, and thence *Varices* will arise in the Fibres, the Knees will tremble, and there will be a Swelling of the Legs towards Night. Thro a Diminution likewise of Motion, from a Decrease of the Heart's Force, it comes about that red Spots appear; the red and fibrous Parts of the Blood being obstructed, by little and little, in the cutaneous Capillaries most remote from the Heart; that is, in the lower Parts of the Legs.

§. 4. THE Blood therefore being extravasated, and thereby putrefying, by reason of the Vessels about the Mouth being too much distended, is the Cause that a Stench arises from the Mouth: The like to which may likewise happen from the Blood's stagnating in the Lungs; and from thence there will also be a Difficulty of breathing. From whence also thro the whole Body will be perceived a *Phlogosis*.

§. 5. BUT this Division cannot be long protracted, but an *erratick*, that is a *scorbutick Fever*, will arise, and the separated Parts run into new Coalitions and Compositions:

*

from

from whence will gather uncertain Pains, from Parts coalescing by uncertain Laws, in Places where the Force of Motion is least; that is, about the Joints. From hence comes a *wandring scorbutick Gout*, which is always attended with a Tumour about the Joints. And if this happens within the Brain it self, then arises a *scorbutick Lethargy*.

§. 6. I SAY, that there is the least Force of Motion about the Joints, that is, in comparison to the Force in Places that lie between the Joints; for there is the least Compression, the *Compages* of the Parts being there necessarily lax, to give way to the turning of the Bones about the Joints.

§. 7. LASTLY, those red Sands, or lixivious Colour of Urine, is an Argument of this intimate Solution, and Division of the Blood.

§. 8. SO that the Scurvy is rightly defin'd to be, *Anintimate Division of the Blood*; or, *A general Change of the last Texture of the Blood*; or, *A Cohesion of the Parts of the last Composition changed*.

§. 9. THERE is no need to explain to you at large, why Phlebotomy is not convenient for Scorbuticks; because this intimate Division of the Blood may easily have its Origin from Phlebotomy: which, by leaving the Blood less confined in the Vessels, gives an Opportunity to the most minute Particles, those at least of the last Composition, of getting

ring loose, and exerting their motive Powers. And if the Particles of the Blood have a Force in respect to some, *Centripetal*, and to others, *Centrifugal*; that is, if there are some efficacious and general Causes, which incline some towards one another, and others to recede from each other, (as we experience some general Causes, which force towards the Center of the Earth, and others, which incline from the Center a different way) then such an intimate Division will more easily happen in the Blood-Vessels after Phlebotomy; because the Blood is then left less confined; for by this Cause the Force of Impulse from the Heart and Arteries being diminished by the Blood which is drawn in Phlebotomy, they may become inferior to the Force communicated by other Causes; so that the latter may be able to exert itself into Action.

§. 10. WHAT has been said, has been with regard to the *hot Scurvy*, as some call it; and which *Willis* will have to be *Sulphureo-Saline*: for this Species alone ought to be accounted the Scurvy, if we would have the Scurvy to be a Disease distinct from the *Hypocondriack Affection*.

§. 11. WHEREFORE omitting Phlebotomy, I affirm, that new Milk, kept from curdling with Rose-Lozenges, or Pearl-Sugar, is a most serviceable Remedy, where the Disorder gets Strength, or grows fixed with Age: But here I mean a Milk-Diet.

§. 12.

§. 12. BUT if any thing forbids the use of Milk, or upon any account makes it less advisable, let there be used a Steel Course, joined with Astringents, and Antiscorbuticks such as they call temperate and fixed; and especially if there be Faintness, a Flux of the Bowels, or a Difficulty of Breathing.

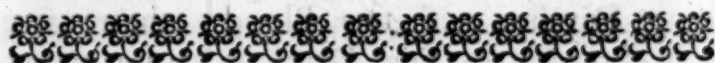
§. 13. If uncertain Pains, or a wandering scorbutick Gout; that is, if new and unwonted Combinations follow upon the foregoing Division of the Blood; then after slight Purging, a Diet-Drink is to be given, made with *Sarsa* and *Guaiacum*.

§. 14. BUT if those Pains seize a Patient on a sudden, without any, or with very few scorbutick Symptoms preceding, or without any manifest Cause; then it ought not to be called a wandering scorbutick Gout, but a *Rheumatism*: Which may be easily known from the Cure; for there is a necessity of taking away Blood in a Rheumatism, often, and in large Quantities, and there is safety in so doing; quite different from what it is in a Scurvy, or in any scorbutick Symptoms.

§. 15. AS for other Matters, the Cure of a Rheumatism agrees with that of a Scurvy: that is to say, in a Rheumatism there is also a necessity of Purging, and that oftner than in a Scurvy; and in both cases a Milk Diet is convenient, if the Decoction of the Woods are less effectual.

§. 16. AND those Antiscorbutick Juices will also be of service, where any thing can be of use.

§. 17. BUT there is nothing so effectual and expeditious after a Milk, or a Steel Course, or the Wood Decoctions, (but the Milk Course, where it agrees, is more certain than Steel) as, the Transfusion of Blood from a sound Animal into a scorbutick Patient.



C H A P. XXIV.

Of the Stone.

§. 1. **A**LL the Moderns agree in explaining the Stone's Generation from a Coagulation of a volatile urinous Salt, with an acid viscous one. They teach therefore, That so long as the Urine is naturally constituted, its volatile urinous Salt is always sufficiently united with a congruous Acid, and so sated with it, that if any more Acid be mixed with such a Urine, it cannot excite any farther Coagulation in it; and this they confirm by the Instance of a Strangury, wherein the Urine is emitted with Pain, by reason of an Acid mixed with it, and by Drops; yet it is not coagulated, because the volatile Salt was first impregnated with an Acid.

§. 2.

§. 2. IT may by the way be remarked, that the Urine is not coagulated; nor does every Strangury arise from Acidity, but from every *Stimulus*, and in that sense it may proceed from an Acid, as that is a *Stimulus*: however, there are many things stimulate besides Acids.

§. 3. BUT that we may return to the Moderns; sometimes it happens, according to their Opinion, that the Urine in the Kidneys, by means of some viscid Ferment deposited there by Nature, or Diet, or a vitiated Stomach, does contract a putrid and fermentative Quality, whereby the volatile urinous Part is separated from its Acid, so that it can again be impregnated with another Acid, and thereby be coagulated; from whence the Stone in the Kidneys has its Origin.

§. 4. NOW I think otherwise; for first of all, whilst I am of Opinion that there is no Ferment in the whole Body, I must conclude that there can be none in the Kidneys: nor is there any thing farther necessary to the Urine's Putrefaction, than that it should be excluded out of the Body, which cannot be the Case while it is in the Kidneys unobstructed; and the Cause of Obstruction therein, is the Stone actually generated, since the volatile Salt of the Urine naturally constituted, is sated with a congruous Acid; therefore altho it should be freed from it, yet by the accession of a new Acid, it would be again sated, and that in the same proportion,

tion, and so no other Coagulation could happen than before : Moreover, all this Coagulation would produce nothing but a Sal Armoniack, and not a human *Calculus*, which is vastly different from such a Salt. I do not think it necessary to acquaint you, that neither the Blood, or any thing separated from the Blood, does ferment in the Body, nor that there is a Separation of a volatile urinous Salt, and a fixed Acid made in the Body, such as is done in the Elaboratories of Chymists; and therefore no Stone can be produced in the manner accounted for by these Moderns.

§. 5. WE ought therefore to remember, that the Urine is compounded of a common marine Salt, or something like it, pure Water, and Earth, that is, some solid and hard Body very cohesive in its Parts: nor does it signify any thing whether the Parts of such a Body are of the same or different Natures amongst one another; nor does it signify of what Nature they are, so that they are hard and cohesive enough. It ought again to be farther remember'd to you, that those who are subject to the Stone, are generally Arthritick, and often Asthmatick. As likewise, too frequent a use of Cheese, will always produce Nephritick Pains, from an Obstruction of the Gravel. Again, They who do not digest well, and are of infirm Stomachs, are always liable to the Gravel; and there are hardly
any

any troubled with the Gravel, who are firm at their Stomach: and therefore such do not sufficiently divide their Food, but generate a viscid Chyle.

§. 6. FROM hence it follows, that the *Stone* is an Aggregate of many of the harder Parts of the Urine, either united by some viscid Fluid, or pent up in the Straitnesses of the renal Ducts; and consisting of many Coats.

§. 7. FOR since there are naturally contained in the Blood, hard Parts separated from the Food, and by reason these are heavier than the rest, they are necessarily deposited upon the Parts least moved, that is to say, about the Joints in the Gout, and sometimes in the Gall-Bladder; but because there are more Ducts in the Kidneys than in the Origin of the Gall-Bladder, they are oftner gathered about the renal Ducts. For altho there is the least motion of all in the Brain, yet the most viscid Parts are most apt to be carried thither, which have not so much Gravity as those which are properly called *hard*. From hence it is that when many hard Particles lodge in a narrow or compressed Canal, their Superficies correspond to the Figure of the Place, and thereby they acquire a kind of Roundness. And this *Nucleus*, the Canal in which it was contained being broke, by means of its Magnitude and Weight falling down into the *Pelvis* of the Kidneys, first of all occasions bloody Urine, by the Dilatation

of the Secretory Canal now admitting the red and thicker Parts of the Blood thro them. Then if it adheres to any part of the *Pelvis*, until a sufficient number of new *Crusts* grow thereupon, so as to prevent its entrance into the *Ureters*, or at least its ready passage thro them; it will cause a *Stone in the Kidneys*, and be attended with *Nephritick Pains*.

§. 8. BUT it is worth observing, that the Coats of a human *Calculus* are parallel to themselves, tho not to the Horizon; so that although the Gravity of the Parts of the first Composition (that is, those which are first aggregated) occasion, that they incline towards the lower Parts of the Body, rather than towards the upper; yet that Gravity is not the cause of their coalition into a Stone of such a Figure: for if so, then all the Coats would be parallel to the Horizon; as we see in that Sediment, which by its proper Gravity falls to the bottom of turbid Urine; wherein all the Parts of the same Gravity are at equal Distances from the Center of the Earth, and so parallel, because they fell by their absolute Gravity, which is in every one the same.

§. 9. BUT it is contrary in a human *Calculus*; so that this difference proceeds from some Cause by which some Bodies are inclin'd to one another, after they are brought into certain Distances: and hereby it is that besides the Laws of Gravity, those hard Parts
do

do not dispose themselves upon the Parts lower than them, with respect to the same Distances from the Earth; but they unite themselves on every side, in the same Distances from the Center of that Crust which was first formed, as much as the capacity of the place they are in, will permit.

§. 10. FROM this Explication of the Generation of the Stone, it follows, that in the Stone of a human Body (or of any other Animal) all those things are to be met with upon a chymical Analysis, which are to be obtained from Urine under the same Management; but not a greater portion of an Acid in respect of other Salts, as it must happen if the Stone was generated from the Coagulation of a foreign Acid, impregnating more than enough the volatile urinous Salt. For if it was not impregnated more than enough, the Urine would remain like it self, without any stony Coagulation. And it is certain, that we see not a greater quantity of a fixed Acid obtained from a human Stone, or of any thing of a coagulating nature, than what is procurable from Urine it self.

§. 11. HENCE also this Stone is equally prevalent against many Diseases, as well as any other Stones bred in animal Bodies, (since they are all formed in the same manner, and from the same Materials) and contained in other Parts besides the Kidneys and Bladder.

§. 12. BUT in my Opinion, neither these Stones, nor any other animal Concretions, are to be given in Powder or Substance, against those Diseases, wherein hard and solid Sediments are thrown upon the Joints, and other Cavities; nor are they upon any account whatsoever to be given to those Patients, to whom the Stone or the Gout are hereditary: for such have either in the *Serum* of their Blood too great a proportion of hard and cohering Particles, or the renal Ducts are too narrow or too few in number; or even the Animalcules in the Testicles of our first Parent *Adam* had the Gravel, and produced a Generation in the like manner afflicted therewith.

§. 13. THE signs of a growing Stone, is pissing but little, and that by Intervals; and it appears by passing in a *Catheter*, and other Symptoms that the Bladder is almost empty. For when some of the renal Ducts begin to obstruct and be compressed, there is less space given for the Separation of the *Serum*; unless, which rarely happens, some other Duct, perhaps of the contrary Kidney, is more dilated at the same time: and therefore the *Serum* which ought to be separated by the urinary Passages, being conveyed into other Parts, it deposits its crusty Sediment into such as are less moved and more lax; whence it causes the Gout and Nephritick Pains at the same time.

§. 14. SINCE also the renal Ducts are made of sensible Membranes, they cannot but sustain an exquisite Pain, when dilated beyond measure. Therefore such Pain makes or occasions a strong reflux thro the Nerves to the Brain; from whence there is a greater Derivation and Distillation of the nervous Fluid into the confluent Tubes with those dispersed to the Kidneys: and so of necessity there is a greater flux of Spirits into the Stomach; and by that means a greater contraction of the Part, and thence a Vomiting and Nauseousness, as we observe Nephritick Patients to be daily afflicted with in the time of the Fit. Therefore an *Ischury*, which is always the effect of a Stone in the Kidneys, especially if it be in both Kidneys, and it seldom proceeds from any other Cause, is removed by the same Remedies, whereby little Stones, that have as yet obtained but a slight Contexture, are broke, and discharged out of the Body.

§. 15. THE Cure of Nephritick Pains and an *Ischury* in the Kidneys, is different in the Fit from what it is when the Fit is over. We will begin with the former, recommending such things as have been found good by our own Experience. If therefore the Patient is of a florid and robust Age, let Blood be drawn from his Arm; for by such means, the Pain, which is called the predominant Symptom, will be lessen'd, and likewise the Thirst and

Vo-

Vomiting. Then a *Clyster* may be injected, with an addition of some *Emetick Wine*, and half an Ounce, or six Drams of Turpentine; but such a *Clyster* must be often repeated, twice or thrice in one Day. Let also *Salt of Wormwood* and Juice of Lemons be given; and if that succeeds not to Expectation, add one Grain of *Laudanum*, or use the following Mixture.

‘ TAKE Mint-Water, and Camomile-
‘ Flower-Water, of each one Ounce and an
‘ half; Cinnamon-Water made with Wine,
‘ half an Ounce; Salt of Tartar, half a Dram;
‘ *Laudanum*, three Grains; Syrup of Marsh-
‘ mallows or Violets, one Ounce.’

LET this be given by Spoonfuls every Hour, until the Pain ceases, or Sleep prevails.

§. 16. THERE are many *Fomentations* which used to be prescribed, as also *Epithems* and *Unguents*; but a *Bath* of warm Water is much better than all of them, if the Bowels are first opened with a *Clyster*. Whilst the Patient is in such a Bath, he may drink of a Decoction of *Camomile* made in clear Water; but the Flowers should be boiled, and new ones added, until the Water is loaded with them; to every Draught of which may be added one Scruple, or half a Dram of *Millepedes* powder’d, or of Earth-Worms dried. Let the Patient sit in the Bath half an Hour; and then being put into bed, let him take a gentle

gentle Sudorifick, for that will in some measure supply the room of a Diuretick; and if it raises Sweat, it will lessen the quantity of *Serum*, and assuage the Pains.

§. 17. IF very little Sand comes away, and the Pain be fixed and violent, with a sense of weight, it is probable, that there is a larger Concretion than ordinary; in which case, after the Bath has been tried to no purpose, a Vomit ought to be given with the Emetick Wine: for by the Concussion occasion'd with the vomiting, and by the violent and frequent Contraction of the Muscles of the Abdomen in that Exercise, it may happen, that the Stone may be dislodged; and that which at first stuck in the *Ureters*, be shook off, and slid away. To obtain which end, it may be of advantage to turn the lower Parts of the Body upwards, and raise the Belly on high, with the Head downwards. Or if an Emetick cannot be admitted with safety, or if it avails little when given, then recourse is to be had to *Purges*; but they ought to be given in small Doses, lest they occasion Vomiting, as the Patients in these Cases have always a Nauseousness, and a propensity that way.

§. 18. THEREFORE all those things should be prescribed which operate in small Quantities; such as Pills with *Elaterium*, or *Diagridium*; and such a Powder as the following is very convenient,

‘ TAKE

‘ TAKE *Mercurius Dulcis*, half a Scruple; Resin of Jalap, twelve Grains; Troches of *Alhandul*, ten Grains; Millepedes prepared, six Grains: let it be given in an Ounce of Syrup of Buckthorn: or with a Dram of the Electuary of dry’d Roses, and Syrup of Violets, a sufficient Quantity to make into a Bolus to be divided into two Parts, to be taken an Hour after one another.’

§. 19. AFTER Purging, let such a Powder as the following be given in Whey, made with *Rhenish* or *French Wine*.

‘ TAKE Earth-Worms prepar’d, one Scruple; Salt of Tartar, half a Scruple; volatile Salt of Amber, five Grains: mix.’

THIS, or somewhat like it, ought to be given in the Fit.

§. 20. BUT observe, that many things may be given in the time of the Fit, for a present Remedy, which will be of no Service out of it, or by way of Precaution.

§. 21. WHEREFORE as for what concerns the Cure out of the Fit, it may be observed, that the too plentiful Use of Diureticks often encreases the Maladies; and especially when such Diureticks are composed of stony or earthy Substances, which by Concretion will augment the Stone, and add to the Distemper: Wherefore mineral Diureticks are the most convenient, such as the Waters impregnated with Steel; because their proper Gravity

Gravity prevents those Incrustations, which are natural to the Formation of the Stone: which is the reason that all purging Chalybeate Waters are so prevalent against the Stone.

§. 22. BUT it must always be taken care that the Gravel be not suffered to grow into Concretions too great for the Passages, as I before admonished. And the most efficacious Waters that can be drank, are those medicated with the *Nitre* of the Antients, or a Salt like to Salt of Tartar; such as are the *Spaw*, and Waters of *Bourbon* in *France*, and the *Moffet* amongst the *Scots*: and in likeness to which may be made Solutions of Salt of Tartar, and volatile Salt of Amber, with volatile *Sal Armoniack*, in a large Quantity of Water

§. 23. IT is not to be imagined that these are so efficacious in this Case, because they remove any Acidity; for Acids themselves would be here of equal service: only for other Reasons they ought to be sparingly administer'd, they not being so agreeable to a healthful State; for otherwise both Reason and Experience inform us, that all Acids are diuretick, and that they break the Stone.

§. 24. WHEN the Fit is urgent, and there is no opportunity for the Administration of the Mineral Waters, there is nothing more excellent than all kinds of *Turpentine*s; either boiled and reduced into Pills, or made into Boles without boiling, to the quantity of half a Dram:

I advise them to be taken daily, with Syrup of Violets, or Marshmallows, in a Draught of Mallow-Flower Decoction after each Dose.

§. 25. THE great *Harvey*, who found out the Circulation of the Blood, cured himself of a nephritick Pain, with a great Dose of *liquid Laudanum*, whereupon he discharged large Stones in his Sleep.

§. 26. THEN let Milk be the common Drink, so that it be prevented from curdling with a Mixture of Barley-Water, and a little Sugar, and the Belly kept laxative by Clysters. I cannot give any better reason why Milk is serviceable to Nephriticks, than because the same is always found of service to gouty Persons; the Symptoms of both which are the same, excepting what relates to the Parts affected.

§. 27. BUT to gouty Patients (because we happened just to mention them) besides a Milk-Diet, all those things are of use which are calculated for an inveterate Pox; that is to say, a Salivation with *Mercurius Dulcis*, kept up for twenty Days together, and a Diet-Drink from Decoctions of the Woods of *Guaiaicum*, *Sassafras*, and *Sarsa*, continued for a Month together.

§. 28. OTHER *Specificks* are very numerous amongst the Writers on this Disease, but of no value, though very dear; which being therefore neglected (before we pass to treat of

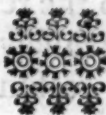
a *Diabetes*) we shall leave one peculiar Specifick against the Stone in the Kidneys and Bladder; *scil.* in the Extremity of the Fit give the following Clyster.

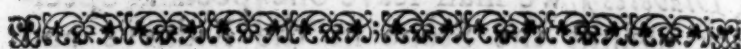
‘ TAKE Clyster-Decoction, eight Ounces;
‘ in which dissolve one Ounce of lenitive E-
‘ lectuary; Emetick Wine, and Oil of Ca-
‘ momile, of each six Drams: mix for a Clyf-
‘ ter.’

AFTER the Operation of the Clyster, give the following Draught.

‘ TAKE of the Etherial Oil of Turpen-
‘ tine, one Dram and an half; *liquid Laudanum*, one Scruple; fine Honey, three
‘ Drams: dissolve them in four Ounces of
‘ White-Wine.’

AFTER the Fit, let the Patient every Month for eight Days together, take upon an empty Stomach, half a Dram of the *Etherial Oil of Turpentine*, and of Honey one Dram, exhibited as before directed, and it will hinder the Fit. This has often been tried.





C H A P. XXV.

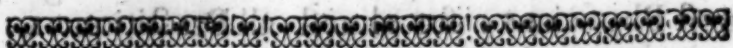
Of a Diabetes.

§. 1. **S**INCE therefore we have explained a Suppression of Urine from a Fault of the Kidneys; it remains that we shew how a Profusion of Urine, or a *Diabetes*, is occasioned: which shall be done in a very short compass.

§. 2. **I**T is, I suppose, already known, that such a Profusion cannot come about, but from the *Serum* being too much attenuated, or the sudorifick Pores too much constringed, or the renal Ducts too much dilated; whereby the *Serum*, of what Figures soever its Parts consist, is separated in too great a Quantity by the Kidneys.

§. 3. **A**ND therefore unless a Suppression of Sweat or Transpiration has been the Cause of the Distemper (in which case Sudorificks will make a Cure) all Astringents ought to be used, which by their Weight will extend the Arteries woven into the renal Ducts, and compress the Ducts themselves: and all *Narcotics* for the same reason. And, lastly, all those things are to be administer'd which give a greater Consistence and Cohesion to the Parts of the *Serum*; that is, all *viscous* and *mucilaginous*

luginous Substances which check a too great Solution of the Blood: such as we have before directed in other Places.



C H A P. XXVI.

Of a Gonorrhœa.

§. 1. **A** TRUE *Gonorrhœa*, or one that is not virulent, that is, only a Weeping of real and unmixed Seed, is to be cured after the same manner as any other Excretions of laudible Juices, and particularly that of Blood. But more especially is good for this purpose the *Pulvis ad Casum* in Bates's Dispensatory, made of sealed Earth, Mummy, Sperma-Ceti, Rhubarb, and Dragon's Blood.

§. 2. **BUT** a *French Clap* is an internal Ulcer of the Yard or *Prostrata*. Its infallible Sign is Coition, without any subsequent Weakness in the Loins; for such Weakness always attends a *Gonorrhœa* that is not *virulent*, which the Antients used to call the *Consumption* of the *Loins*.

§. 3. **I**N a *virulent Gonorrhœa* there is, for the most part, a Heat of Urine; and then by the *French* it is called a *Chaudepisse*: sometimes there is a Contraction of the Yard, which
Y they

they call *une Cordé*; sometimes the Matter discharged, looks green or yellowish: But these are known to all.

§. 4. THE Cure is very tedious amongst most Physicians: for almost all Practitioners, and those of the greatest Name, commend a long Use of Clysters, amongst whom was Sydenham, and an Emulsion to be repeated every Night. The same also commend Injections, especially the *French*, as likewise do the Surgeons, with the Juices of mucilaginous Plants, and their Decoctions, mixed with Honey of Roses, or Aloes, or *Rhasis's* Troches, or *Laudanum*.

§. 5. BUT all these are mistaken; for neither Clysters are of any service, nor Injections into the Yard: nay, they are quite opposite, and most commonly occasion *Caruncles*. Emulsions indeed are beneficial, but that chiefly to the Apothecary: And *Quercetans-Water*, or the Turpentine-Water in the *London-Dispensatory*, so much extolled by *Et-muller*, and many others, is altogether good for nothing: it is commended indeed for strengthening and astringing the Parts by drying them; but it is injurious for the reasons which we shall hereafter give against the Use of *astringent Pills*, customarily prescribed at the end of a *Gonorrhœa*.

§. 6. WHEREFORE in the beginning of every *Gonorrhœa*, you must first purge with *Pills*, *Powders*, or *Boles*, if the Patient cannot

not dispense with *Potions*; but it is best to use a laxative *Ptisan* of Sena, and Salt of Tartar, and Melilot-Flowers, in Spring-Water. In the purging Days, let the Patient drink Whey, or small Ale, or *French* White-Wine diluted with Water, with half a Scruple of *Sal Prunella* dissolved in it, three or four times in a day.

§. 7. A F T E R three or four Days purging (wherein, unless the Season is severe, the Patient may go about his ordinary Business, to deceive his Acquaintance) then if the Running begins to lessen, and is of a better Colour and Consistence, and the Urine is less hot, give Boles with Turpentine and Rhubarb for six or seven days; so that the Turpentine be double or triple the Quantity of Rhubarb. Be not concerned if those Boles purge more than the laxative *Ptisan*, for they may do so, and all be very well.

§. 8. I N the mean time, to remove the Contraction of the Yard, if it be troublesome, let the Patient wash the Part affected often with warm Milk, or a Decoction of Mallow, or Marshmallow-Leaves made in warm Water.

§. 9. I F he does this, he will be cured, especially if it be the first Infection.

§. 10. B U T if a *Caries* of the Yard (so I call all Ulcers about the *Glans*, which the *French* call *Chancres*) comes on, then *Mercurius Dulcis* ought to be moreover given with

the Catharticks; for otherwise such a *Caries* will change into a true Pox. But a *Gonorrhæa* never changes into a Pox, unless it be indiscreetly stopped with Astringents. Further, for ten days a Decoction of *Sarsa* ought to be subjoined to the former, omitting the Turpentine Boles, if the running is stopped, and applying to the Ulcers Powder of red *Precipitate*.

§. 11. IN this last Case two, or three, or five Grains, if the Patient be of a robust Constitution, of the green *Precipitate* from *Schroder*, ought to be given two or three times in the purging Pills first of all; nor need you be concerned, if the Patient vomits therewith. But generally speaking, *Mercurius Dulcis* will suffice; altho in a *Gonorrhæa*, it signifies nothing.

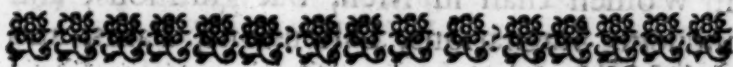
§. 12. BUT at all times beware of those astringent Pills which most practical Writers direct after a *Gonorrhæa*, as they imagine, is conquer'd, for strengthening the Parts, made of Mummy, Bole, Dragon's-Blood, &c. for these very often change a *Gonorrhæa* into a true Pox.

§. 13. WHEREFORE in their stead, if there be occasion, always give *Venite* or *Cyperus Turpentine*, two Scruples, with one Scruple of Powder of Amber in a Bole; or divide such a Quantity into two Doses, to give one every Morning and Night, for a Week together.

§. 14.

§. 14. IN the mean time all violent Exercises ought to be avoided, Cohabitation with Women, Riding, and all kinds of Wine, and especially Brandy.

§. 15. LET their common Drink be a Decoction of Mallow and Violet-Leaves, and their Flowers, with a little Liquorice; or a Decoction with eight Pints of Spring-Water, and half an Ounce of *Guaiacum* Bark, with a little Liquorice added towards the End of the boiling, and let half be consumed. Let the Patient eat no other Supper or Breakfast besides Bisket and Raisins. Shun all Acids; but above all things an infected Woman.



CH A P. XXVII.

Of the Whites.

§. 1. **W**OMEN also are infested with a Running from the Womb, and the Neck thereof, that is glutinous, more or less approaching to a white Colour, and often painful, with an Ulcer of the Parts. There is no need of distinguishing between this Female Flux when it is venereal or not, because (otherwise than in Men) the *Whites* can very rarely be removed, altho there is no Virulence, by any other Remedies than those

which are appropriated to what is venereal.

§. 2. BUT there is a real Difference: for in the *Whites* that are not infectious, the Running is viscid; but that which is venereal, is not viscid, but altogether thin and watry. Yet these are better by a judicious Person distinguishable from Circumstances.

§. 3. THIS Running is generally from the *Vagina*, or Neck of the Womb, and its Glands commonly so called; sometimes from the lowermost Part of the Womb, and especially, which often happens, if the Patient be of an ill Habit, and Leucophlegmatick: For a healthful Constitution of the Body and Blood, excerns a greater Quantity of a serous Fluid in Women than in Men, but glutinous, and inducing Stagnations, Distentions, Pains, and at last Ulcers.

§. 4. THERE is no occasion of spending more Words in the Explication of the Theory of this Disorder, whose Cure is rather to be enquired after: and therefore omitting all things unnecessary, and an unprofitable Jumble of Medicines, I shall propose only those which are efficacious; for the Indication is manifest.

§. 5. THEREFORE one thus affected, after repeating *Catharticks* three or four times, (if the Patient be hysterical, twice Purging will suffice) let her take at night going to rest, in the Form of a Bolus, one Scruple of Gum *Guaiacum*, and seven Grains of *Mercurius Dul-*
cis,

cis, with a sufficient Quantity of Honey, or Syrup of Cloves: And every other Night in its stead, let her have the following *Bole*.

‘TAKE *Mercurius Dulcis*, half a Scruple; Conserve of Sage, two Scruples: mix together.’

IN the Morning after one of those Boles, let her take two Scruples of the *Edinburgh Ecphractick Pill*, or the *Catholick Extract*; for such are hard to work upon. When the Patient does not purge, let her take *Turpentine* in *Boles*, or boiled up into *Pills*.

§. 6. AND after these have been often used, let her drink of the following Decoction.

‘TAKE Bark of *Guaiaicum* and *Sassa* Root, of each three Ounces; Raspings of Ivory and burnt Hart’s-Horn, red Sanders, of each half an Ounce: let them steep in Spring-Water, eight Pints, and then boil to four Pints; towards the end, add of the larger Raisins, three Ounces.’

LET this be drank for a Month together, in the Summer-time, as common Drink.

§. 7. MORNING and Evening use the following *Fumigation*:

‘TAKE native *Cinnabar*, half an Ounce; Gum *Guaiaicum*, *Olibanum*, *Mastich*, and *Storax*, of each two Drams; *Aloes-Wood*, and *Rhodium Wood*, of each half an Ounce: mix, and let two Drams serve for one *Fumigation*.’

§. 8. INJECTIONS may do service in this Case ; I mean an Injection of the following Liquor.

TAK E of both the Birth-wort Roots, (but the long is here to be preferred) of each one Ounce ; Leaves of Mugwort, Feverfew, and Pennyroyal, of each one Handful and a half ; wild Tansy, two Handfuls ; red Wine, four Pints : boil to two Pints and a half ; then add Tincture of Myrrh and Aloes, of each six Drams ; Balsam of Sulphur, dissolved in Spirit of Wine, two Drams : mix.

THERE ought to be added to this Decoction also *Archangel-Flowers*.

§. 9. BUT if these avail not, recourse must be had to the Waters ; but the menstrual and sanguinary Discharges are to be promoted by other means.



C H A P. XXVIII.

Of a Suppression of the Menses.

§. 1. I CANNOT, in such a manner as it deserves, explain to you the Reason, how it comes about that some Women have

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have not their *Menses*; because it depends upon an acquaintance with the same Causes which occasion that Women, and not Men, have such Monthly Evacuations of Blood by the inferior Parts of their Bodies. This we have not time here to explain, it being necessary to hasten to the Remedies of this Disorder, which are of more service to Girls than Words.

§. 2. HOWEVER, I may affirm, that the Cause of this is foolishly and falsely attributed to any Ferment; because it appears that there is no such thing in the *Uterus*, as a Fæculent or an Effervescent Blood: nor can it be denied but that the Menstrual Blood in Maidens is the best Blood.

§. 3. THEREFORE when the *Menses* are deficient, very often a *Plethora*, and almost always a Viscidity, is in the Cause; for if there was a scarcity of Blood, there would be no occasion for its Discharge: sometimes a Tenacity of the Vessels is the Fault. But whether it be a *Plethora* or a Viscidity, that causes this Disease, the Blood is largely to be drawn away: and always remember first of all to take it from the Arm, and then from the Foot.

§. 4. THESE Patients are also to be purged, especially if they are under an ill Habit, and their Feet swell; but particularly the Pills of *Heurnius*, taking a Scruple at Night going to rest, are very convenient.

§. 5.

§. 5. BUT it does most good to drink three or four times in a Day of some medicated Ales, or a draught of White-Wine, in which such things have been infused, as have been recommended against a schirrous Liver; and to which may be added sometimes Savin with good advantage.

§. 6. I had almost forgot to observe to you, that those who are under a Suppression of the *Menses*, whether it be wholly, or at uncertain returns, or in part, almost always are hysterical (for these Symptoms have the same Causes, and give way to the same Cures;) and therefore can they but indifferently bear purging. Wherefore to these it may be more convenient to give a Vomit; for there is none of them but can undergo its Operation; and the *Nausea* they are so constantly subject to, even call for this Method.

§. 7. BUT Vomiting being over (and that always after Phlebotomy) you must proceed to Infusions or Decoctions with the Roots of Birthwort, Mugwort, Madder, Angelica, Male Fern, Tops of Rosemary, and Centaury the lesser, Savin, Flowers of Lavender, Sage, and wild Carrot-Seed, with Cinnamon; which of all Aromaticks is in this case the best. To an Infusion, Steel ought to be added; if the Blood be too viscid: which the Skilful will allow to be the best Method, in young Girls especially; and it will succeed with the greatest Certainty.

C H A P.

C H A P. XXIX.

Of a hard Delivery.

§. 1. **S**INCE the Delivery of a pregnant Woman is the Excretion of something which ought not to have been, or ought not to be any longer in the Womb; it is not amiss to subjoin to what has gone before, some Directions about the Difficulty of this Office.

§. 2. **I**T is not the Concern of a Physician to enquire about the Difficulties of this Excretion, or Delivery, which proceed from an unnatural Posture of the *Fetus*, or from a Straitness of the Passages of the Person to be delivered: for a Surgeon, or the Husband, ought to employ their Care in such Exigencies; but that only which is from a defect of Strength in the Person in Labour, or from such a Straitness of the Passages, or Resistance of the Parts inclosing them, which may be conquered by an addition of Strength, without the Help of a Surgeon, Midwife, or Husband, by the Skill only of a Physician.

§. 3. **B**UT to this there is nothing required more than to add Strength to the Muscles of the Abdomen, and others contributing to Respiration, and to make their
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Contractions more frequent and brisk ; for by these the *Fætus* is expelled, and the Resistance of the *Os Coccygis*, and other circumambient Parts, is overcome.

§. 4. PRACTITIONERS for the most part prescribe Remedies proper to be taken in the time of Delivery ; but not such things as can prevent those Remedies not being wanted at that season.

§. 5. I AFFIRM to you, that besides Clysters, Vomits are of the most extensive use in assisting the Throws of one in Labour, especially when there is a Suspicion of a difficult one. For all Vomits encrease the Motion of the Muscles of the Thorax and Abdomen.

§. 6. BUT it is necessary to take notice, that if the pregnant Person is on other accounts well, it will most commonly be convenient to let Blood in the Arm, giving a Vomit before-hand ; that is, if her Time is up : for otherwise, by reason of too much Blood, the Nerves will be too much compressed by the Arteries, which are greatly distended in time of Gestation ; and the Efflux of the nervous Liquid into the Muscles will be hindred, and so there will be no muscular Motion.

§. 7. THEN all those Diureticks, and Provokers of the *Menses*, are necessary to be given for promoting Delivery ; that is, because they forward the Ejectment of the *Fæ-*
tus,

tus, by encreasing the Force of the abdominal Muscles.

§. 8. IN the time of Gestation, the Blood always grows thicker, by reason of its almost stagnating in the Vessels of the lower Ventricle; which is manifest from the unwonted Distention of the Vessels in those Parts, and the frequent *Varices* therein: Wherefore being confused with the nervous Fluid, it neither readily nor easily rarefies; from whence there is a Difficulty of Contraction. But those Diureticks and Provokers of the *Menses*, do nothing else than attenuate the Blood, whereby it more easily and readily rarefies; and so they stir up in those Parts the Muscles to more ready and more forcible Contractions; from whence the Muscles of the *Abdomen* contract more strongly. For they are ridiculous who imagine, that Medicines expel the *Fetus*, by acting immediately upon that.

§. 9. LASTLY, all Spices and Aromatics contribute to ease Delivery, and especially Cinnamon; for they all rarefy the Blood: and therefore they more easily expand the animal Spirits, and they flow with the nervous Fluid into the Muscles of the *Abdomen*, where they are most wanted at such times. And this is so certain, that I have known frequently a considerable hard Labour got over, only by drinking a Draught of hot *Bordeaux* Wine.

§. 10. WHEREFORE other things (that is, Vomits and Phlebotomy) being let alone, or administred without success, then are to be given Diureticks, and Provokers of the *Menses*, and Aromatics; that is, such things as expel the *Fetus*. Therefore prepare Decoctions, or Potions, or Powders, or any Mixtures that may readily be composed from Savin, Borax, Baum, Mugwort, Penyröyal, the opening Roots, and particularly Madder; Myrrh, Castor, Oil of Amber, Spirit of Harts-horn, or of any other part of an Animal; and sometimes *Laudanum*. The Operation of the last in this case demonstrates that *Opium* does act only by a power to rarefy, (and not by an entangling quality destroying the Spirits, as *Willis* and *Sylvius* imagine) and thereby give a greater Vigour to the Muscles, by means of the Blood being more attenuated, and easily concurring with the nervous Fluid to inflate the Muscles.

§. 11. EXPERIENCE has recommended to me the following Powder of *Heurnius*.

‘ TAKE Cinnamon, half a Dram; Myrrh, Grains eight; Madder-Root, and Castor, of each five Grains; Borax and Saffron, of each two Grains. Mix for one Dose to be taken in a Glass of *French White-Wine*.’

§. 12. Half a Dram of the Troches of Myrrh also does good in this Circumstance; especially if given in the following Mixture.

‘ TAKE

‘ T A K E Penroyal-Water, one Ounce;
‘ Cinnamon-Water made with Wine, half
‘ an Ounce; Borax, one Scruple; Salt of
‘ Amber, five Grains; Spirit or Tincture
‘ of Castor, one Dram. Mix for one Dose.’

§. 13. I WOULD therefore have you always apprised, not to prescribe as soon as you are called at first, things that are too forcibly expelling, (unless the Labour hath a long time been in hand, and Symptoms appear dangerous;) nor by any means let the Patient every Moment keep sipping spirituous and rarefying Liquors, as some crazy Women pour down such things: for thereby she will be thrown into a Fever and Convulsions, and not be deliver’d, by means of the nervous Fluid being too much compressed in its Pipes by a rarefy’d Blood.

§. 14. T H E R E is one thing proper to add; That after a difficult Labour (which is always attended with some untoward Symptoms) care ought to be taken that the *Placenta*, or *After-Birth*, be entirely brought away, by examining if it be whole; for there is no believing the most solemn Midwife in such a case, because she will be always ready to affirm it was all excluded, in justification of her own Performance, in her Office. From the retention of the *Placenta*, or some portion of it, by much the greatest part of those Symptoms arise, which distress Child-bed Women

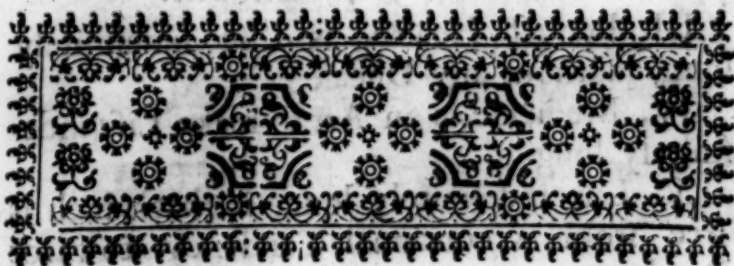
men after their Delivery ; which may be known by the course of their Cure.

§. 15. AND now those Symptoms are to be removed only by such Medicines as have been already recommended for expelling the *Fetus* ; that is, Mixtures : such as, for example, wherein Tincture, or Spirit of Castor, or of Saffron, or Saffron itself, or the volatile Salt of Amber, or Spirit of Man's Skull, or of Sal Armoniack, have been compounded.

§. 16. AND these Symptoms are always attended with a Fever, that is commonly erratick ; also Pains of the Belly, and hysteric Affections, are never absent ; but when once the retained part of the *Placenta* is brought away, they vanish.

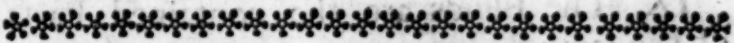
F I N I S.





A Summary of the Whole.

Where there is no sure Judgment of a Disease, there can be no Certainty of Cure. *Celsus.*



POSTULATES.

- I. *All Matter is Divisible.*
- II. *There is a Living Body.*
- III. *In a living Body the Blood circulates.*
- IV. *Where the Blood circulates, there is Life, and e contra.*



DEFINITIONS.

- I. **L**IFE is a Circulation of Blood thrown out of the Heart thro the Arteries, and returning again by the Veins.
- II. Health is a healthful Life; or, a free Circulation of the Blood, attended with no Pain.

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III.

III. Perfect Health, is Life indefinitely long, without any Disease.

IV. Medicine is an Art to make Life indefinitely long

V. Life indefinitely long, is that which is free from a continual Tendency towards Death.

VI. Life free from a continual Tendency towards Death, is a most sound State of Health.

VII. A living Body is compounded of Canals of divers kinds, conveying different sorts of Fluids.

VIII. The Canals are the containing Parts of a living Body.

IX. The Fluids are the contained Parts of the same Body.

X. Both the Parts contained and containing, are essential to the same Body, and united by one common Life.

XI. A Temperament, is a sensible Change in the Canals from a perfect State of Health, and which is perceiv'd by the Fluids.

XII. Innate Heat is the Attrition of the Parts of Blood produced from their circulatory Motion.

XIII. Radical Moisture is the circulating Blood itself.

XIV. Digestion is a Commintion of the Food into Chyle.

XV. Secretion is a Separation by the Glands.

XVI. Fermentation is an intestine Motion of Parts produced from some foreign Matter.

XVII. The vital Faculty is the muscular Force of the Heart, by which it throws the Blood all over the Body.

XVIII. The Natural Faculty is a Power arising from the Blood's Circulation, manifest in all the Secretions made in a living Body; except that alone, which is made by the Origin of the Nerves.

XIX. The Animal Faculty is that Power which is exercised within the Brain by the Blood there circulating, in the Secretion of a Fluid, derivable into the Nerves.

XX. The Animal Spirits are the Fluid derived from the Brain into the Nerves.

XXI. Inspiration is the Influx of Air according to the Laws of Motion, into the Lungs.

XXII. Respiration is the Return of that Air out of the Lungs.

XXIII. The Diastole is a strong Dilatation of an Artery, made by the Heart's Contraction.

XXIV. The Systole is a Contraction of an Artery, made by the Heart's Dilatation.

XXV. The Pulse is a Motion of the arterial Blood, compounded of the Systole and Diastole.

XXVI. Urine is a Liquor strained from the Blood in the renal Glands.

340 *A Summary of the Whole.*

XXVII. The Hypostasis is the heaviest part of the Urine, and which has the greatest share of Salt and Earth in it.

XXVIII. An Enæorema is that part of the Urine one degree lighter, that has less Salt and Earth; whence it is suspended.

XXIX. A Cloud is the lightest of the solid parts of the Urine.

XXX. A Disease is the circulatory Motion of the Blood too much encreased or diminished.

XXXI. The Crisis of a Disease is the Digestion of the morbid Matter, and of any Humour to be excreted.

XXXII. A Cachochymy is the Velocity or Quality of the Blood changed by some means from its natural state.

XXXIII. A Plethora is an encreased Bulk or Quantity of Blood.

XXXIV. A Fever is the Motion of the Blood encreased.

XXXV. An Apoplexy is a total Privation of Sense and Motion (except a weak one of the Heart and Breast).

XXXVI. A Palsy is a Privation of Motion or Feeling, or both, produced from some Cause within the *Cerebellum*.

XXXVII. A Vertigo is an apparent turning round of visible Objects at rest.

XXXVIII. A Convulsion is an involuntary Contraction of a Muscle, and a constant Immovability of the Part.

XXXIX;

XXXIX. An *Epilepsy* is a Convulsion of all or some of the Parts of a Body, with a Privation of Sense.

XL. A *Catalepsis* is a Species of an *Epilepsy* joined with a constant Constriction.

XLI. A *Constant Contraction* (i. e. a *Tetanus*) is a Species of Convulsion, wherein all the Parts of the Body are pulled together with the utmost Stiffness.

XLII. A *Delirium* is the Dream of a waking Person, wherein the Ideas pass without any order.

XLIII. A *Mania* is a *Delirium* without a Fever, joined with Anger and Audacity.

XLIV. A *Phrensy* is a *Delirium* with a Fever, from an inordinate Motion of the Spirits.

XLV. *Pain* is a Sense of some violent and sudden Solution of Continuity, made in any Part.

XLVI. A *Cephalalgia* is a Pain from a Solution of Continuity in the membranous Parts of the Head.

XLVII. A *Catarrh* is an unwonted Effusion of *Serum* from the Glands about the Head and Mouth.

XLVIII. An *Ophthalmy* is an Inflammation of the *Tunica Adnata* of the Eye.

XLIX. An *Epiphora* is a Species of a *Catarrh* affecting the Eye, which separates from the Arterial Blood like Tears.

L. A *Pterygium* is a nervous, fibrous and white Membrane growing to the *Tunica Adnata* from both Angles of the Eyes.

LI. An *Amaurosis* is that sort of Blindness which discovers no Defect in the external Parts of the Eye. It is also called a *Gutta Serena*.

LII. A *Suffusion* is a Concretion of Particles falling into the watry Humour of the Eye, by degrees obscuring the Sight.

LIII. A *Cataract* is a confirmed Suffusion.

LIV. An *Angina* is a Disease of the Gullet and Throat, arising from a stagnant Blood.

LV. A *Pleurisy* is an Inflammation of the Pleura, arising from a stagnant Blood.

LVI. A *Peripneumonia* is an Inflammation of the Lungs, attended with a Straitness of the Breast, a Difficulty of Breathing, a Fever, and a Cough.

LVII. An *Asthma* is a Difficulty of Breathing, from some Defect of the Lungs.

LVIII. An *Anorexy* is a Loathing of all Food, from a Defect and Weakness of Attrition.

LIX. An *Apepsy* is a Defect of Digestion of the Aliments in the Stomach.

LX. A *Cholera Morbus* is a frequent vomiting of what is tinged yellow, with a Flux likewise downwards.

LXI. A *Pica* is a preposterous craving of things altogether unfit for Nourishment.

LXII. A *Bulimy* is an encreased or a Dog-Appetite.

LXIII. A *Malacia* is a Dog-Appetite, with a melancholy Delirium.

LXIV.

LXIV. *Costiveness* is an Obstruction of the Intestines from a Detention of the *Feces*.

LXV. The *Iliack Passion* is such an Obstruction of the Intestines, that nothing goes downward, but the Humours, and even Excrements, are thrown up by Vomit.

LXVI. A *Diarrhaea* is a frequent going to Stool.

LXVII. A *Dysentery* is a Looseness with bloody and purulent Stools, arising from some sharp Matter corroding the Bowels.

LXVIII. An *Hepatick Flux* is such a Looseness of the Belly, as has bloody Stools like the washing of Flesh.

LXIX. The *Hemorrhoides* is too great a Protrusion of Blood by the Hemorrhoidal Veins.

LXX. A *Lientery* is a *Diarrhaea* joined with an *Apeply*.

LXXI. The *Callick Affection* is a bad Distribution of Chyle, by means of too quick a Passage of the Aliments into the Intestines, and their Ejection thence.

LXXII. The *Cholick* is a painful Sensation of the Colon, arising from what causes a Solution of Continuity.

LXXIII. *Worms* are Animals in the Intestines, arising from viscid Humours, and disturbing the Offices of the Bowels.

LXXIV. The *Jaundice* is an Obstruction of the Liver, from some glutinous or gritty Matter.

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LXXV. A *Schirrus* is a hard Tumour, arising from some glutinous and gritty Matter.

LXXVI. A *Schirrus of the Liver* is a Tumour produced from an Obstruction of glutinous and gritty Particles, encreasing in Quantity.

LXXVII. A *Dropſy* is a preternatural Tumour of the whole Body, or some Part of it, arising from a Collection of a watry Humour.

LXXVIII. An *Anasarca* is a preternatural Distention of the whole Body, from an Over-Quantity, and Extravasation of a watry Humour.

LXXIX. An *Ascites* is a preternatural Distention of the Abdomen from a Rupture of the Lymphaticks.

LXXX. The *Hypocondriack Affection* is a Disease of the Hypoconders, proceeding from a defective Commixture of Chyle and Blood in the intestinal Canals.

LXXXI. The *Hysterick Passion* is a convulsive Motion of the membranous Parts in the lower Belly, arising from the Action of something heterogeneous, thrown out with the nervous Fluid by Intervals into the Fibres, and constringing them.

LXXXII. The *Scurvy* is a depraved Disposition of the whole Body, from a Fusion of the Blood, and too intimate a Division of its Parts.

LXXXIII.

LXXXIII. The *Stone* is a solid Substance pent up in the Kidneys, from a Concretion of the harder Parts of the Urine, in Lines parallel to themselves.

LXXXIV. The *Gout* is a Disease of the Joints, from an Erosion and Extension of the nervous Parts.

LXXXV. The *Rheumatism* is a wandering Gout.

LXXXVI. A *Diabetes* is a Profusion of Urine, with a Colliquation of the whole Body.

LXXXVII. A *True Gonorrhœa* is a weeping of true and perfect Seed, attended with a Flaccidity of the Parts.

LXXXVIII. A *French Gonorrhœa* is a Running of tainted Seed, from an Ulcer of the spermatick Parts.

LXXXIX. A *Fluor Albus* (or the Whites) is a Catarrh of the Womb, from a Flux of the *Catamenia* turning white.

XC. An *Ulcer* is a Solution of Continuity from some eroding Matter.

XCI. A *Tumour* is too great a Distention of a Part, from any Cause whatsoever.

XCII. An *Inflammation* is a Tumour from the Blood stagnating in the membranous Parts.

XCIII. *Putrefaction* is a Dissolution of Food from the warm Moisture of the Intestines, but of the reach of any circulatory Force.

XCIV.

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XCIV. A *Symptom* is somewhat in a living Body contrary to Health; or, the Actions of a living Body, or some Part of it impair'd.

XCV. The *Indicant* is something observed in a living Body, either agreeable to, or opposite to Health, by means of which something is pointed out to be done for its Service.

XCVI. The *Indicated* is the Means pointed out for Help.

XCVII. An *Indication* is what points out the Indicated.

XCVIII. *Delivery* is the bringing a *Fetus* into the World, by the help of a convulsive Motion of the Muscles, of the Abdomen, Diaphragm, Back, and other Parts.

XCIX. A *Hard Delivery* is an Exclusion of the *Fetus* different from the natural way of its Expulsion.

C. *Death* is the Height of a Disease, or, a Circulation of the Blood entirely stopped.

The Definitions of other Diseases may be met with in Riverius, and others.

PRO

XIII. Such is the Nature of a Fluid, that
it will give way to those more
solid Bodies, which are forced
upon it.

PROPOSITIONS.

XIV. The different Parts of a Body, which
are accounted as such, in respect to those which
are more solid, are distinguished by their
different Motions.

I. **T**O any Body somewhat may always
be added.

II. From any Body somewhat may always
be taken away.

III. There is no Part of any one Body so
small, but some Part of another Body may be
found exactly as small.

IV. Division cannot be without Motion.

V. Bodies are capable of Motion.

VI. No Body moves itself.

VII. In all Motion there is always some
foreign impelling Power.

VIII. From the manifold Motions of the
Parts of Bodies, proceed Solidity and Fluidity.

IX. Every Body is fluid, whose Parts give
way to any protruding Force, and which in
giving way, are easily moved one amongst a
another.

X. Every Body is solid, whose Parts mu-
tually cohere, and will not easily be removed
from one another.

XI. The Descent of every thing, is through
some Fluid.

XII. Some Bodies descend faster, and some
flower, thro the same Fluid.

XIII.

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XIII. Such is the Nature of a Fluid, that when its Parts are equally at rest, the Part least pressed, will give way to those most pressed.

XIV. The Parts that are less pressed may be accounted at rest, in respect to those which are more pressed.

XV. A lesser Motion in respect to a greater, is a kind of Rest.

XVI. The quiescent Parts of a Fluid, or those in a manner at rest, will yield to any Impulse.

XVII. If a Fluid is equally pressed on all Sides, it will move no way, but necessarily keep at rest.

XVIII. A solid Body will swim any where in a Fluid of equal specifick Gravity.

XIX. If two Bodies of equal Bulk have not the same Weight, the lighter will keep uppermost.

XX. The Gravity of any whole is the Sum of the Gravities of all its Parts.

XXI. Bodies which have an equal number of equal Parts, have necessarily the same Quantity of Matter.

XXII. All those Bodies which contain an equal Quantity of Matter, are of the same Weight.

XXIII. Bodies of the same Bulk that do not equally gravitate, do not contain an equal number of equal Parts.

XXIV.

XXIV. Two Bodies which have not under the same Dimensions any Spaces void of Matter, must contain an equal Quantity of Matter, or an equal number of equal Parts, and therefore of necessity equally gravitate.

XXV. All Bodies are not full.

XXVI. There is no subtile Matter filling the Pores of all Bodies.

XXVII. There is not any one Portion of Matter, pervading the Pores of any Body so small, but that Body also in which it is contained may be divided into Parts equally as small.

XXVIII. Every Body continues as much as possible in a State of Rest, or Motion in a right Line.

XXIX. There is in every Body a Power of Resistance.

XXX. The Resistance of a Body arises from its Quantity of Matter.

XXXI. This Resistance does not arise from Gravitation.

XXXII. From the Resistance of a Body proceeds its Elasticity.

XXXIII. If two Bodies having equal Quantities of Matter, and moved with equal Celerities into contrary Directions, meet one another, they will there necessarily cease Motion.

XXXIV. Every Body gravitates towards the Earth.

XXXV.

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XXXV. There is no Levity in Bodies, but what is relative.

XXXVI. There is no part of Air, how small soever, but has some Gravity.

XXXVII. There is no part of Air, how small soever, but has some Resistance.

XXXVIII. In all heavy Bodies, there is a Center of Gravity.

XXXIX. Gravity is not the Cause of Bodies Coalition into any determinate Figures.

XL. The Figure of a fluid Body is more susceptible of Motion, than the Figure of a solid Body.

XLI. The Parts of Fluids have less Superficies in respect to their Bulks; and the Parts of Solids, greater.

XLII. The Parts of an animate, or inanimate Body, either flow, or are contained within bounds, by means of their lesser or greater Surface, in respect to their Quantities of Matter, and their Contacts.

XLIII. A living Body is the Object of Medicine.

XLIV. A living Body is compounded both of Solids and Fluids.

XLV. The Parts of a living Body are divisible into *containing* and *contained*; that is, Canals and Fluids.

XLVI. The Fluids of a living Body have a determinate degree of *Fluidity*.

XLVII. The Canals of a living Body have a determinate degree of *Elasticity*.

XLVIII.

XLVIII. The *Proportions* of divers Bodies composing the same Fluid, are infinite.

XLIX. The *Circumstances* of the Canals and Fluids of a living Body are infinite.

L. Every Body is alive, in which the Fluids in its Canals are continually in motion.

LI. In every living Body the Blood circulates, and *è contrà*.

LII. Heat is the effect only of a circulatory Motion of the Blood.

LIII. The Motion of the Blood being encreased, the Heat will encrease, and *è contrà*.

LIV. The Heat of the Blood and of the Parts of the Body is proportional, *ceteris paribus*, to the Velocity of the Blood at the same distances from the Heart.

LV. The Heat of the Blood is directly as its Velocity, and reciprocally as its Distance from the Heart.

LVI. At the same distances from the Center, or the same Proximity, in equal Quantities of Blood their Heat will be as their Velocities.

LVII. The Heat of the Blood under equal Velocities will be reciprocally as its distances from the Heart.

LVIII. The Circulation of the Blood is the measure of Life.

LIX. Every Part of a living Body performs some perfect Action.

LX. A perfect Action which is attributed to an Organ, is compounded of the concurrent like Actions of many Parts.

LXI.

LXI. The Fluids act upon the Canals, and
à contrà.

LXII. From the Actions of the Fluids proceed the Temperaments.

LXIII. Temperaments are Changes in the Conditions of Fluids, which may be infinitely produced.

LXIV. Temperaments affect the *Canals* only secondarily by the Fluids.

LXV. There are only three general Temperaments.

LXVI. That Fluxility of Blood, which in any given Force of Circulation allows the *Bile* to be separated in a greater Proportion to the rest of the Secretions, than it is wont to be in the same Inhabitants of the same Climate, inclines into a *bilious* Temperament.

LXVII. That Fluxility of Blood which in a Spleen well constituted, allows a greater Proportion to be secreted by the Kidneys, and cutaneous Passages, than by the other Secretions, inclines to a *melancholy* Temperament.

LXVIII. A *pituitous* Temperament is when, in a given Velocity of the Blood, the Proportion separated by Spittle is greater than any other Secretion.

LXIX. A Person in any of these Temperaments, is actually growing into a diseased State.

LXX. A Temperies of the Fluids within their respective Canals, is a healthful Constitution of a living Body.

LXXI. A Temperies (or Harmony) of Temperaments, so called, is a real Distemperature; wherein some Secretion is greater in proportion, than is necessary for Life indefinitely long.

LXXII. Temperaments are Nurseries of Diseases, or beginning Diseases.

LXXIII. Temperaments are no other than various kinds of a Cacochymy.

LXXIV. No one is in perfect Health.

LXXV. The Health of an Animal consists in the Secretions being duly made from the Blood.

LXXVI. Health is injured by the Encrease or Diminution of any Secretion.

LXXVII. Health can be hurt only by those things, which diminish or augment the natural Secretions.

LXXVIII. All Diseases of the Fluids consist either in a Change of their Qualities, or a Change of the Velocities of their Motions.

LXXIX. Only by a Change of Velocity in their Motion, the Qualities of Fluids may be changed, and their Secretions either augmented or diminish'd.

LXXX. The Quantities and Qualities of all other Fluids may be changed by an Alteration only of the Quantity or Quality of the Blood.

LXXXI. If the Blood exceeds in Quantity, it is a Plethora ; if in Quality, a Cacochymy.

LXXXII. Matter is a Quantity.

LXXXIII. Motion is a Quality.

LXXXIV. By the Changes of Matter and Motion, are produced all the Diseases of a living Body.

LXXXV. The Cure of all Diseases ought to be in adjusting the Changes of Matter and Motion.

LXXXVI. These Changes, whether for the better or the worse, are performed by certain mechanical Laws.

LXXXVII. The Cure of every Disease, whether in the Vessels or Fluids, or both, is to be effected only by mechanical Laws.

LXXXVIII. All the Secretions in a living Body, are performed only by the Laws of Mechanism ; as also they are to be promoted or restrained by the same Laws.

LXXXIX. From the Suppression of any Secretion must necessarily arise some Disease.

XC. From a Suppression only of the cutaneous Secretion, proceed Fevers, and many other Diseases.

XCI. The cutaneous Secretion is double all the rest.

XCII. Gravity is the Principle of Motion downwards.

XCIII. Gravitation is the Exertion of that Gravity, and the Principle of Secretion.

XCIV. The Parts of all Fluids are in an *Equilibrium*.

XCV.

XCV. There is an Equilibrium between the internal and external Air; or, the Weight of the external Air upon the Body is counterballanced by the internal.

XCVI. The Orifices of all the secretory Outlets in a living Body are alike.

XCVII. All the Pores of the Glands are circular.

XCVIII. There is no Difference of Pores, but in their greater or lesser Capacities.

XCIX. In two Places equally distant from the Heart, if the secerning Orifices are equal in number, the Quantity secerned in the first Place ought to be to the Quantity secerned in the second, as the Orifices of the first are to the Orifices of the second.

C. If the Orifices of the Vessels are equal, the Quantity secerned in the first Place ought to be to that secerned in the second, as the number of the secerning Vessels in the first Place is to the number of the secerning Vessels in the second.

CI. The Commintion of Chyle is made by the perpetual Motion of the muscular Coat of the Stomach.

CII. The Commintion of Blood is done by the Action of the Lungs, the Force of the Heart, and the Compression of the smaller Arteries.

CIII. The larger Parts of Blood, and those of the last Composition, are divided by the

Constriction of the Blood-Vessels in the Lungs.

CIV. From the same Means whereby the larger Parts of Blood are divided, and separated from one another; the Compages of the finer Parts, or those broke off, is render'd more firm.

CV. Nutrition is performed by the Apposition and Insinuation of Parts separated from a Fluid.

CVI. The things taken in by Food or Medicine, ought to be endued with such Parts, as may put on the Nature of those fit for the Encrease of the Canals and Fluids.

CVII. That Species of Secretion wherein the greatest Resistance is given by the Sides of the Vessels, is Nutrition.

CVIII. The Motion of a Fluid secerned in Nutrition from the Resistance of the secerning Canal, is much slower than the Motion of other Fluids thro their Canals.

CIX. In the nutritious Secretion through the Vertex of the Canal from a wider Base, the Angle is much greater than any of the other Canals where the rest of the Secretions are made.

CX. A Fluid, whose Parts are all of the same Gravity, will equally pass thro equal Orifices; and *è contra.*

CXI. Where all Parts are not of equal Gravity, the heavier will descend to the Center: and the Motion of the flowing Parts will be

en-

increased or diminished in a given Proportion to their Gravity.

CXII. The natural Power will be in a given Proportion to the vital Powers: and both in a given Proportion to the animal ones.

CXIII. According to the Proportions of the natural, vital, and animal Powers, will be the natural, vital, and animal Secretions.

CXIV. In all Secretions made within the Body, except that which is at the Origin of the Nerves, there is a certain natural Force circumscribed by the Laws of Circulation, and nourishing the Parts of the whole Body.

CXV. There is a vital Power in the arterial Blood, diffusing thro all the Arteries and Capillaries, from the Center to the Circumference; and giving Warmth to the whole Body.

CXVI. There is an animal Power in the Spirits, subsisting in a given Proportion to the natural and vital Powers in the venal and arterial Blood, arising from the Blood circulating within the Brain.

CXVII. The natural Power is the Principle of nutritive Secretion: which being injured, many Diseases necessarily arise, not only in the Stomach, but in other Parts.

CXVIII. The vital Power is the Principle of Heat in a living Body: which being likewise injured, many Diseases will arise from the Fault of the arterial Fluid.

CXIX. The animal Power is the Principle of Sense and Motion: which being injured, arise Apoplexies, Palsies, Distraction, and many other Distempers of the Head.

CXX. The Principle of Motion and Sense depends upon the Generation of Spirits: and is exerted in their Flux and Reflux.

CXXI. The Principle of vital Heat depends upon the Motion of the Heart: and innate Heat is founded in the radical Moisture.

CXXII. Attrition into the minutest Parts is the Principle of Digestion; and Digestion is the Beginning of Nutrition.

CXXIII. Chyle is made by the Attrition of what is swallowed, by a Change only of the Parts of the last Composition.

CXXIV. Blood is made by the Attrition of Chyle, by changing only the Figure of the chylous Particles.

CXXV. Every Part of the Body is nourished and sustained by the Blood.

CXXVI. Every Part is not nourished with the entire Substance of the Blood.

CXXVII. The Parts are not nourished with *Serum* alone.

CXXVIII. All those things which are capable of Digestion within an Animal, are capable of Corruption out of it.

CXXIX. Those things which are out of the Force of Circulation, ought to be accounted out of the Animal, altho they are within a living Body.

CXXX.

CXXX. Those things which are carried thro the intestinal Tube, are out of the reach of Circulation.

CXXXI. The Food is not by Attrition divided into essential Parts, but into integral Parts only.

CXXXII. Every Cause of a Disease either diminishes or augments some Secretion, or Excretion.

CXXXIII. Medicines adapted for the Promotion of any Secretion, ought to be found out, examined, and tried, in order to relieve any particular Distemper.

CXXXIV. Every Cause of a Disease either encreases or diminishes the Blood's circulatory Force.

CXXXV. Medicines adapted for the Promotion of the Blood's Circulation, and to encrease or to diminish its Quantity, are to be found out and tried, in order to give Assistance in Diseases that arise from either a Fulness, or a vitiated Disposition of the Fluids.

CXXXVI. Phlebotomy is to be administered wheresoever the Blood is to be lessened in Quantity, or its Viscidity and Adhesion is to be removed.

CXXXVII. Whatsoever things bring Pain, make the Vessels and Muscles contract more strongly, and thereby most readily throw off the Fluids which obstruct them.

CXXXVIII. To put any Part into motion, there is requisite a free Passage for the Blood

and Spirits into the Muscles of the Part to be moved; which Passage being stopped, all Motion is prevented; and a *Paralysis* of that Part is to be feared.

CXXXIX. A free Concourse is to be maintained of both the nervous and arterial Fluid, or when lost, restored, in order for the Muscles rightly to discharge their Offices.

CXL. Besides the Influx of the nervous and arterial Fluid into the Part to be moved, there is required also a sudden Rarefaction, and an Elevation on all sides into small Vesicles, of one or other, or of both the Fluids flowing into the Muscles.

CXLI. No Part is moved unless the Muscle leading thereto is contracted in length, by the Rarefaction of the Fluids running thereinto.

CXLII. A Muscle cannot be contracted in its length, unless it be distended in breadth; and unless the solid Parts of the muscular Fibres are suddenly forced outwards, from a Quantity of influent Fluid.

CXLIII. As often as the Blood does not flow freely into the Muscles that are to move any Part, or the Spirits are not convey'd thither; then all ways and means are to be attempted that are agreeable to mechanical Laws, for removing such Obstruction, and that the Muscles may perform their Contractions from a due Influx of Blood and Spirits.

CXLIV.

CXLIV. As often as the Blood flows precipitantly into the Muscles of any Part to be moved, or the Spirits are carried into them with too great a force, so that the Contraction of the Muscle cannot be hinder'd by the Dictates of the Mind, there will arise a violent Contraction of those Parts; the Relaxation of which must be endeavour'd by Exinanition.

CXLV. By the Power of the Mind often exerted, a Person may direct a greater Quantity of animal Spirits into a Muscle having an Antagonist, than can be derived into any other Muscle, from any other Cause.

CXLVI. Extraordinary Pain must necessarily arise from a Nerve drawn by opposite Powers.

CXLVII. Where the Blood, flowing with the nervous Fluid into the Muscles, can yet rarefy, but not be freely moved within the Nerves, and be drove in various waves; there Sense will be taken away, but not Motion.

CXLVIII. Whatsoever things too much fill the Body, or the Parts thereof, and too much thicken the Blood, they cause Inflammations, Convulsions, and Epilepsies.

CXLIX. Whatsoever things too much empty the Body, or its Parts, and evacuate those Juices that are necessary for Nourishment; they will also propagate convulsive Disorders.

CL. If a lesser quantity of Blood and Spirits is derived into a Muscle for the motion of any Part, than into its Antagonist; then there will be a Contraction, and convulsive Motion of the Antagonist.

CLI. The Images which appear in an internal Opthalmie, are nothing else but the Parts of the *Retina* itself compressed by the Blood-Vessels, which are too much distended.

CLII. There is no Point of a visible Object from whence the Rays of Light do not fall upon all the Points of the *Cornea*.

CLIII. The Corpuscles floating in the aqueous or chrySTALLINE Humour, cannot express any Image upon the *Retina*.

CLIV. There is a two-fold nature of every Portion of arterial Fluid, that enters the Origin of the Nerves: one part of it is very movable and spirituous, but the other more viscid, and thickning with Heat.

CLV. The difference of Velocities in the Blood-Vessels may be diminished, so far as to be less than any given Quantity.

CLVI. The Velocity of Blood in an evanescent Artery, is equal to that in a beginning Vein.

CLVII. In the Blood there are some parts hard and earthy; whence arise various Diseases.

CLVIII. In the Urine are many parts earthy and hard; whence arise Sand and Gravel.

CLIX. The heavier parts is thrown upon places where there is the least motion.

CLX.

CLX. These heavy parts are often lodged upon the Joints; whence arises the *Gout*.

CLXI. These are sometimes deposited in the Gall-Bladder; whence proceed *Gall-Stones*.

CLXII. These are oftner deposited in the renal Ducts; whence *Gravel in the Kidneys*.

CLXIII. The Stone in a human Body is prevalent for all those Purposes as Stones bred in any other Animals.

CLXIV. These ought not to be given in Substance against those Diseases, which deposit Sediments in the Joints and Cavities.

CLXV. In Distempers from Repletion, all is to be subtracted, which abounds; and on the contrary, in Diseases from Exanition, that is to be added, which is wanting.

CLXVI. In Distempers of the Head, a Physician ought to be very careful to maintain a free Flux and Reflux of the animal Spirits.

CLXVII. In Distempers of the Breast, the greatest Attention is required to maintain a free Respiration.

CLXVIII. In Distempers of the Stomach, both full and empty, regard is always to be had to what is taken in, and thrown out.

CLXIX. In Distempers of the Intestines, the Influx of those things which ought not to flow thither, is diligently to be prevented.

CLXX. But in such Disorders of the Intestines, where those things flow not into them

them which ought, and those things are retained which ought not to be retained, their Discharge must be forwarded by the proper excretory Outlets.

CLXXI. In hypochondriacal Persons, and hysterical Women, convulsive Motions arise from a Pressure upon the Brain, by Arteries carrying Blood that is not sufficiently comminuted.

CLXXII. All those things which either by their Weight or Smallness can procure the necessary Comminution to the Chyle and Blood, must be of service both to hypochondriacal and hysterical Persons.

CLXXIII. The cause of scorbutick Symptoms, is a disturbed Mixture of the Blood; or, an intimate Division of its Parts.

CLXXIV. The Causes and Cures of scorbutick, melancholy, and hypochondriack, and hysterick Affections, are the same.

CLXXV. By an intimate Division of the Blood, there is a Solution of its Parts; and a Removal of them from one another's Contact.

CLXXVI. By this Fusion of the Parts of the Blood, it comes about that the Excretions are in some places greater than natural.

CLXXVII. Excretions are greater than in an healthful State, by means of many Particles of our Blood being made by such Division so small, as to run off faster than natural by the discerning Orifices.

CLXXVIII. By the removal of some parts of the Blood from the Contact of other parts, there

there happen many sanguine Excretions and Eruptions; because one Particle can get thro, where two together cannot.

CLXXIX. The Blood, fused by such an intimate Division of its Parts from one another, takes up more Space than before; and by that means presses upon the Nerves more than usual.

CLXXX. The Blood so divided, presses upon the Nerves in the Brain more than it ought, and occasions a lesser Derivation of nervous Fluids to the Heart and Muscles, and thence an Impotence to Motion.

CLXXXI. By means of a lesser Derivation of Spirits from the Brain, and a Diminution of Motion from the decay'd Force of the Heart, it comes about that the Blood often stops in the capillary Vessels remote from the Heart, or is extravasated by the Vessels being too much distended, or burst.

CLXXXII. From the Blood thus stopping in the Lungs, proceeds a difficulty of Breathing; and from its stagnating in any other parts, there arises a *Phlogosis*.

CLXXXIII. No Fusion of the Blood, or distorted Mixture thereof, can last long, without bringing on an erratick Fever.

CLXXXIV. The Parts of the Blood separated thus from one another, run into new Coalitions and Compositions; whence wandering and uncertain Pains, from the Particles of Blood mixing with uncertainty in those places where the motive Force is least.

CLXXXV.

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CLXXXV. If this happens about the Joints, where the Motion is slowest in respect to the Force in the intermediate parts, there arises a *wandering Gout*; and if this happens within the Brain, there arises a *Scorbutick Lethargy*.

CLXXXVI. If the Particles of Blood have Inclinations, in respect to some *Centripetal*, and to others *Centrifugal*; then a Separation of its Parts will more easily happen after Blood-letting, when it is left in the Vessels less crouded.

CLXXXVII. Since this Separation of the Blood may easily have its Rise from Blood-letting, that can by no means be proper for Scorbuticks who have such a Separation.

CLXXXVIII. When the Powers of Motion impressed by the Heart and Arteries are diminished by Phlebotomy, they will become less than the Powers communicated by those universal Causes, *viz.* the centripetal and centrifugal ones; and therefore these will exert themselves the more; as the Parts of Blood become divided.

CLXXXIX. In every Disease whose Appearances may arise from an obstructed Motion of the arterial Fluid, and from a Cessation of Motion in the nervous and venal Fluids, it is always rather to be conjectured from that in the Arteries, than from that contained in the Nerves or Veins.

CXC. In soporiferous Diseases Blood is to be drawn

drawn away before all things, and all *Stimuli* to be used.

CXCI. A Vertigo does not arise from a circulatory Motion of the animal Spirits, but from a shaking of the *Retina*, by a Distention of the Arteries in the Eye.

CXCII. The Stone does not arise from a Coagulation of a volatile urinous Salt, with a viscid acid Salt, but from Earth and hard Particles in the Urine.

CXCIII. There is not, or can be, any viscid Ferment in the Kidneys.

CXCIV. The Coats of a human Stone are not parallel to the Horizon, but to themselves.

CXCV. Gravity is not the Cause of their Coalition into such a Figure.

CXCVI. In the Stone there is nothing found by a chymical Analysis, but what may be found in the Urine, managed in the same manner.

CXCVII. The Cure of Nephritick Pains, is not the same in the Fit, as out of it.

CXCVIII. The Cure of an Epilepsy is not the same in the Fit as out of it; and so of other Diseases.

CXCIX. Nothing which is continually moved grows sour; but such things only which upon the Cessation of Motion, stagnate, or adhere.

CC. In order to perpetuate the Motion of the Spirits and Blood in the Body, and to remove
its

its Impediments, whether in the Fluids themselves, or their Canals; regard must always be had to the natural Powers, or to the things taken in or ejected.

A PROBLEM,

To find a proportionate Remedy to any given Disease:

SOL.

In every Disease to find out the Indicated from the Indicant; and when found out, to apply it.

There is yet wanted in the Art of Healing,

A Medicine that shall immediately take away the Rarefaction of the Blood, and diminish its Motion, without any subsequent bad Symptom. *Book 2. Chap. 1. §. 35.*

F I N I S.

